THE RAILWAY GAZETTE

A Journal of Management, Engineering and Operation

INCORPORATING

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## CONTENTS

| | PAGE |
|---|---|
| Editorial Notes | 377 |
| Sir William Stanier | 379 |
| Mr. Train's Paper on L.N.E.R. Engineers' Department Organisation | 380 |
| Operating Efficiency of U.S.A. Railways: 21 Years' Progress | 381 |
| Letters to the Editor | 382 |
| The Scrap Heap | 384 |
| Overseas Railway Affairs | 385 |
| L.P.T.B. Signalling Practice | 386 |
| Simplified Siding-Track Formulæ | 386 |
| Cargo Coaling Plants—IV | 388 |
| The Transport Problem in Plain Terms | 391 |
| Modifications to Indian Shunting Locomotives | 393 |
| Personal | 395 |
| Transport Services and the War | 397 |
| Stock Market and Table | 404 |

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*Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards*

## An Indication of Railway Receipts

THE G.W.R. has announced that receipts from merchandise traffic alone for the week ended March 26 last, were more than £100,000 in excess of the total receipts from all traffics for the corresponding week in 1938. Published receipts for the week to March 27, 1938, were: passengers £169,000; merchandise £202,000; coal £114,000; a total of £485,000. This would indicate that the merchandise receipts for the week to March 26 last was approximately £585,000. *The Financial News* points out that if the increases in fares since the war were disregarded, G.W.R. passenger receipts for the week to March 26 might have been in the region of £287,000, and that if the 16⅔ per cent. addition to fares was added, the expanded figure would be £334,000. If the coal receipts were approximately unchanged this year, the total G.W.R. receipts during the recent week, increased as above, would have been about £1,033,000, or 113 per cent. more than in 1938. The shift of traffic westwards probably has increased the G.W.R. figure as compared with the other main lines, but if the same rate of increase were applied to the four group companies, the total in gross receipts for the week ended March 26 would be in the region of £6,100,000, compared with £2,876,000 in the week ended March 27, 1938. This would be equal to about £317,000,000 for the four lines for the whole of the year; total pool revenue for 1943 was over £381,000,000, including the receipts of the London Passenger Transport Board.

## Chief Mechanical and Electrical Engineer, L.M.S.R.

Mr. C. E. Fairburn, M.A., who succeeds Sir William Stanier, F.R.S., as Chief Mechanical Engineer of the L.M.S.R., has had ample opportunity to sample the joys and sorrows of his new office, for he has been deputy for Sir William for about seven years, during the last two of which he has been acting directly in Sir William's capacity. He has had a very extensive experience in railway engineering, beginning with his pupilage under Sir Henry Fowler at Derby, after which he gained considerable distinction as an engineer in charge of various railway electrification schemes, both at home and abroad, during which time he was associated with various commercial undertakings. He returned to the L.M.S.R. in 1934 to succeed Colonel Cortez Leigh as Chief Electrical Engineer. Mr. Fairburn, like Sir William Stanier, has a considerable gift for organisation and for the selection of the most promising of the younger members of his staff to act as his assistants. He has also taken a great interest in their technical training, and an example of the excellent results of the team spirit he has fostered was revealed in his recent paper on diesel-electric shunting locomotives, of which we printed an abstract in our issue of March 31. Every trouble which arose in the working of these locomotives was systematically attacked by a group of keen and highly trained engineers until it was overcome. Mr. Fairburn's enviable reputation as an outstanding engineer in the field of electric and diesel-electric traction is already established. We hope that he may have an equal degree of success in managing the numerous and highly efficient series of steam locomotives left to him by his predecessor. Since Mr. Fairburn joined the L.M.S.R. he has always remained Chief Electrical Engineer in addition to the duties he undertook during the absence of Sir William Stanier. From now onwards he will be Chief Mechanical and Electrical Engineer.

## Age Limit for Railway Directors

A perennial matter of discussion among railway stockholders and the public, and often indeed among railway directors, is whether a retiring age limit should be fixed for those charged with the direction of affairs. In the case of members of the executive of railway and similar large companies, that age is frequently 60 or 65, and there are advocates of a similar policy being applied to directors and chairmen. At the present time, in particular, there would seem good ground for basing retirement on other than age considerations. Length and width of experience and mental and physical vigour would seem to be better criteria than a mere figure of years. A better case, perhaps, could be made out for lightening the work of certain directors or chairmen by delegation of duties, which would enable their companies to retain the benefit of proved ability, more particularly perhaps in matters of negotiation, which may loom large in the near future, both in the case of British and overseas railway companies. The latter have recently suffered a severe loss by the death of Sir Follett Holt, who, although 78 years of age, retained his mental vigour to an outstanding degree. He did not assume the Chairmanship of the Buenos Ayres Great Southern Railway Company until he was almost 69, and his value in that office was above question. A retiring age of 65 would entail the early loss to the Central Argentine Railway of Mr. W. Howard-Williams, which would be highly regrettable at the present juncture, when Anglo-Argentine railway affairs are so unsettled.

## Property Owners and Rent Control

As large property owners, the railway companies are interested in the current review by the Ridley Committee of the control of rents. The Property Owners' Protection Association has issued its memorandum of evidence to the Ridley Committee as a brochure, and in it sets out in a readily assimilable form the comparative costs of housing repairs in 1935 and 1943; a table of the cost of living in each month of the last seven years, as well as in August, 1914, and November, 1920; tables of the prices of building materials in 1939 and 1943; and the principal changes in wages rates reported in October, 1943. The two main recommendations made by the Association are that the basic date for the calculation of rent increases should be changed from August 4, 1914, to May 26, 1938, and that houses controlled by the 1920-38 Acts should be subject to an increase of 25 per cent. of the net rent at May 26, 1938, for additional repairs, and a further 25 per cent. of the net rent for profit rental. The cost of repairs to property generally has doubled, and this increase at present has to be met out of the 8s. in the £ left to owners after the payment of income tax and War Damage Contribution.

## Overseas Railway Traffics

A slight revival has taken place in the prices of the securities of British-owned railways in Argentina, and this looks like being maintained in the absence of further political developments. Traffics in the 39th and 40th weeks of the financial year were also satisfactory. The increases in the two weeks were:—Central Argentine £74,196, Buenos Ayres Great Southern £60,480, Buenos Ayres & Pacific £24,600, Buenos Ayres Western £20,400, Entre Rios £6,672, and Argentine North Eastern £5,358. For the first quarter of 1944 receipts of the Nitrate Railways amounted to £53,480, an increase of £18,102. The Great Western of Brazil for the same quarter has secured gross receipts of £315,000, representing an increase of £89,000, and the corresponding figures of £578,606 for the Leopoldina show an advance of £149,921. On the Antofagasta the traffics to date are £394,920, an increase of £23,010.

| | No. of week | Weekly traffics £ | Inc. or dec. £ | Aggregate traffic £ | Inc. or dec. £ |
|---|---|---|---|---|---|
| Buenos Ayres & Pacific* .... ... | 40th | 130,800 | +12,600 | 4,159,320 | +212,580 |
| Buenos Ayres Great Southern* ... | 40th | 200,460 | +24,480 | 7,181,400 | +721,440 |
| Buenos Ayres Western* ... ... | 40th | 63,000 | +11,100 | 2,218,860 | +70,140 |
| Central Argentine* ... ... | 40th | 178,620 | +38,472 | 5,960,412 | +658,833 |
| Canadian Pacific ... ... ... | 13th | 1,921,400 | +236,000 | 14,969,800 | +2,313,200 |

* Pesos converted at 16⅔ to £

Aggregate gross earnings of the Canadian Pacific Railway for the first two months of 1944 amounted to £9,545,800.

## British Railway Investments in Colombia

At one time there was a fair number of British-owned railways in Colombia, but some years ago the Government adopted a policy of acquiring them, and many were bought and paid for by the issue of Government bonds. The result has been that, at the present time, British investors have comparatively small interest in the railway affairs in that country. The Dorada Railway is, in fact, the only one which falls within this category. *The South American Journal*, which compiles statistics relating to investments in Latin-American countries, points out that this concern generally manages to make some return on its capital, and for 1943 it distributed 5 per cent. on its ordinary shares. The Colombia Railways & Navigation has ceased all transport operations in Colombia, including the Barranquilla Railway & Pier Company, which has sold its business to the Government and is being paid for it in annual instalments. The amount of British capital invested in Colombian railways, and shown in the London Stock Exchange Lists at the end of last year was £1,971,811, on which interest amounting to £54,295, or 2·7 per cent., was forthcoming. For the previous year the amount outstanding was £2,121,811, on which only £27,205 was paid in interest, equal to 1·3 per cent.

## Southern Railway Engineers' Department

Recently we drew attention to the decision of the Southern Railway to term Mr. V. A. M. Robertson, the new head of its Way & Works Department, Chief Civil Engineer, whereas Mr. George Ellson, his predecessor, bore the title of Chief Engineer. In our January 28 issue we pointed out that the L.M.S.R. had previously made this change in title, but the heads of the Way & Works Departments of the G.W.R. and L.N.E.R. were still designated Chief Engineer. The increasing use on the Southern Railway of the term Civil, as opposed to Mechanical or Electrical, Engineer is carried a stage further by the announcement published in our issue last week of the appointment of Mr. Conrad Gribble, previously designated Assistant Engineer (New Works & Bridges) as Deputy Chief Civil Engineer. He will continue to deal with new works and bridges. The Southern Railway has also made changes in the title of four other senior members of the department. Lt.-Colonel G. L. Hall, Assistant Engineer (Signals & Telegraphs), is in future to be Signal Engineer; Mr. A. Dean, Assistant Engineer (Maintenance), is to be Maintenance Engineer; Colonel A. B. Chester, General Assistant, is to be Assistant Engineer (General); and Mr. L. J. Boucher, Chief Assistant to Assistant Engineer (Signals & Telegraphs), is to be Assistant Signal Engineer.

## Diesel-Electric Traction in India

In a recent leading article, our contemporary *Indian Engineering* deals with the subject of diesel-electric traction in India. After drawing attention to the general advantages claimed for this form of motive power, the writer suggests that the long trunk lines in that sub-continent, many of them far remote from the main coal deposits in Bihar and Bengal, are admirably suited to it. There, the cost of coal is three or four times that in Bengal, and the diesel, therefore, has a better chance of competing on the basis of operating costs. There are, however, other and very trenchant aspects of the case to be considered, such as initial cost, reliability, and maintenance. The main-line diesel-electric express locomotive is, admittedly, a costly machine, a point not mentioned in the article. India, moreover, has not always been too fortunate in her pioneer experiences with such locomotives, and the reliability and maintenance of delicate electrical equipment in a climate with very high temperatures is a different problem from that in more temperate climes. These, no doubt, are teething troubles which will gradually be overcome, at a price, and experience with diesel-electric railcars has been happier. Meanwhile there can be little doubt that the diesel-mechanical shunting engine has an assured future before it in India as in other parts of the world. In this connection the article states that five diesel shunters do the work formerly requiring nine steam locomotives in one American yard.

## The Urgency of Paper Salvage

Despite the effort made by most sections of the community, we understand that there is still a weekly deficit of several thousand tons of waste paper for war needs. The impending extension of military operations will absorb, and destroy, vast quantities of paper in the forms of ammunition, packaging for food, medical supplies, etc., and for other essential purposes. With the much reduced amount of paper being put into current circulation, inevitably the day-to-day collections of waste have suffered, and substantial results can be achieved only by an intensive effort to tap such accumulations of business houses, manufacturers, professions, and institutions, as still remain unsorted. Of course, much has already been done in this direction, but it is believed that there are still hundreds of thousands of tons to be obtained from these sources. The railway companies have already made outstanding efforts, as we have recorded from time to time, but it is possible that there are still railway sources capable of being tapped, especially if the decisions about what may be sacrificed are universally recognised. Moreover, with the passage of time, what was regarded as essential in the way of current records in 1941 may now be available for release. Manufacturers, particularly with their severely depleted staffs, have perhaps felt tempted to make a gesture and then leave the matter, but a keen Salvage Officer, who, with the backing of the management, explores every opportunity of turning out all old and mainly obsolete records makes a most valuable contribution to the war effort.

## The Collision at Ilford

On page 400 appears a summary of the report, issued over the joint signatures of Sir Alan Mount and Major G. R. S. Wilson, on the serious collision which took place on the L.N.E.R. in Ilford Station on January 16, 1944. Although there was not much evidence that could be said to be in dispute, as it was a plain case of over-running signals in a bad fog, the circumstances called for a lengthy report. Three colour-light signals, one showing yellow, the two others red, were among the 5 signals passed unheeded by the colliding train. The fog, which had descended suddenly, after clearing in the early afternoon, was exceptionally dense and unfortunately no fogman had reached any of the posts concerned. The driver of the preceding train had himself over-run the signals at Ilford Station, just catching sight of the one at the western end, and had stopped and gone to the box for information. The driver who ran into this train was on the right of the engine and had a fireman, sent to him, as a substitute, at Ipswich, who had not been along the route for some months and did not know that the colour-light signals had been installed. The driver relied on him to observe them. The alleged interchange of words on the footplate creates a poor impression. Whatever actually took place between the men, the train was allowed to run on at an appreciable speed for some distance and only a red light shown at Ilford East box made the driver realise the position.

### Detonator Placers and A.T.C.

The signal immediately preceding the obstruction was equipped with a co-acting detonator placer. (It was this signal which was principally concerned in the accident that occurred here on January 1, 1915.) It transpired, however, that there had been no live detonators in the machine for some time before the accident and the report refers to the need of improved arrangements for ensuring re-charging. Actually the non-existence of the detonators was an advantage, as had they been there the first train would doubtless have been stopped sooner and the collision would have been more serious. No signal box concerned had an emergency detonator lever. It should be especially noted, however, that no error in signalling was made and that all signalmen acted promptly, as best they could, when the threatened danger was realised. There was insufficient time for them to place detonators on the line by hand, and the circumstances are a reminder of the value of placers worked from the boxes, as an aid to signalmen (and to drivers) in an emergency of this kind, especially where sections are short and there are four lines of way. Undoubtedly any apparatus which would have conveyed a warning to the driver might have had preventive effect, and as yet we are still far from seeing any general extension of A.T.C. equipment throughout the main lines in this country. We are likely to remain in a transitional stage for some time, even as to a general extension of colour-light signalling. No definite general policy, apart from the G.W.R., has yet been announced on this matter. Colour lights are being increasingly adopted, as they bring marked advantages to all trains without having to apply equipment to the latter, and in this way our already high standard of safety is being raised.

## Sir William Stanier

THE retirement of Sir William Stanier from the position of Chief Mechanical Engineer of the L.M.S.R., as noted in our April 7 issue, brings to a close a remarkable railway career of no less than 52 years, a career which towards its end was crowded with high achievement, and which brought the honour of a knighthood and the rare distinction, among locomotive men, of Fellowship of the Royal Society. For amid the varied and onerous responsibilities of the high office from which he has just retired he remained above all a locomotive man, and it is by this work on the L.M.S.R. that he will best be remembered and honoured in the future. But before his appointment, in 1932, he had spent nearly forty years in the service of the G.W.R., and it is no doubt the very completeness of his earlier experience that enabled him to direct, with such conspicuous success, the far larger organisation of the Chief Mechanical Engineer's Department on the L.M.S.R. He began at the very bottom rung of the ladder as an apprentice in Swindon works; and was successively apprentice and draughtsman. Thence by rapid stages he rose till in 1923 he was appointed Principal Assistant to the Chief Mechanical Engineer of the G.W.R.

He went to the L.M.S.R. at a critical time. There were increasing signs that the country as a whole was weathering the great slump, but although there was the most urgent need for economy on every hand it was imperative that the railways should make a big effort to regain lost traffic by the introduction of new and improved travel facilities. The Executive of the L.M.S.R. was convinced that in a policy of standardisation lay the best means of securing economic motive-power operation, and towards this end some progress already had been made in the reduction of the number of different locomotive classes. At the time of Stanier's appointment there were very few really modern types on the line. New and up-to-date motive power was needed everywhere. Rarely can a new Chief Mechanical Engineer have been confronted with a task of such urgency and such magnitude, and yet one which, if skilfully handled, offered greater possibilities. By a vigorous policy of "scrap and build" practically the whole of the L.M.S.R. first-line locomotive power was, under Stanier's direction, renewed during the ensuing eight years. For each of the broad classes of duty new and thoroughly successful designs were prepared. Among these the development of the general utility 4-6-0 mixed-traffic design may well be considered one of the greatest of his achievements. In it he provided a locomotive which could cover almost the entire sphere of L.M.S.R. operating, from Wick to Bournemouth, from Hull to Swansea, and which seemed equally at home on a 600-ton fitted freight over the heavy grades of the Settle and Carlisle line as in running up to 90 m.p.h. with 250-ton expresses elsewhere on the Midland Division. Then there is the "Silver Jubilee" class of three-cylinder 4-6-0s, for intermediate express service, the 2-6-4 tanks for short-distance passenger work, and the class "8" 2-8-0s for goods and mineral traffic. These latter have in themselves proved general utility machines, having a surprising turn of speed, and as a result of war requirements they have become numerically the strongest of all Stanier types. A number, modified in certain details, has been in service on the Persian State Railways, and more recently others have been built by the L.N.E.R. and Southern Railway for general service in Britain.

It was, however, in providing adequate engine-power for the Anglo-Scottish, and heavy Western Division express passenger services that Stanier scored his most spectacular success. Although contributing to a lesser extent than the class "5," and "5X" 4-6-0s towards the absolute metamorphosis of the locomotive position that has taken place on the L.M.S.R. since 1934, the Pacific engines of the "Princess Royal" and "Coronation" classes have collected a whole sheaf of brilliant records, for hill-climbing, long-sustained high-speed running, and heavy load haulage. Perhaps their most striking characteristic is that the relatively high overall thermal efficiency of 10·8 per cent. under normal operating conditions is maintained even when they are worked at something approaching full capacity for long periods, as in the remarkable dynamometer car trials of February, 1939, when the non-streamline engine *Duchess of Abercorn* worked a 600-ton train from Crewe to Glasgow and back. Even so, Stanier was not satisfied that the best had been attained. Seeking a considerable increase in thermal efficiency he had already experimented with turbine propulsion, and his *Turbomotive* in so far the only British abnormal design reliable enough to keep its place in everyday service. In his Presidential Address to the Institution of Mechanical Engineers in October, 1941, Stanier disclosed that at the outbreak of war a modified design of Pacific engine was on the board, incorporating the Chapelon principles of front-end layout and a boiler pressure of 300 lb. per sq. in., by which he doubtless hoped to attain, or perhaps even to surpass the 12·8 per cent. overall efficiency of the P.O.-Midi 4-8-0s. The double-chimney already had been adopted on the later "Coronation" engines, and still more recently, and with remarkable success on the "Royal Scots" which have been reboilered. Even without the projected "Super-Coronation," Sir William Stanier leaves behind him on the L.M.S.R. a record of great achievement. Obviously it is not possible yet to say anything regarding his war work since 1942, as Scientific Adviser to the Government. For the future the L.M.S.R. has secured Sir William's services in the capacity of a consultant. So far as this paper is concerned, the editorial staff of *The Railway Gazette* have grateful recollections of the ready help given and facilities afforded in connection with the preparation of technical articles.

## The Transport Problem in Plain Terms

IN the House of Lords on October 27, 1943, Lord Leathers, Minister of War Transport, when discussing the future of inland transport, stressed the necessity after the war for the country to give every opportunity for export trade by providing a really cheap and efficient transport service. He defined "cheap" as a transport system so co-ordinated and run that it provides the best possible service for the least real cost to the community as a whole. After referring to the fierce competition which has occurred since 1921 between the road haulage industry and the railways, he made the point that whatever the merits of competition for stimulating enterprise and efficiency, if it is carried to such an extent as to undermine the stability of services essential to the community and to commercial interests, its effect ultimately will prove damaging to the national interests. He then mentioned that the persistent road-rail problem remains an important problem to be solved in connection with inland transport but admitted that he had no precise suggestions at present to make as to its solution.

The problem is most difficult but it is a vital one in our national economy and its solution is imperative. A variety of proposals has been put forward in recent months and on page 391 we publish a provocative contribution to the matter from a veteran railway correspondent who possesses wide knowledge and experience. His views are somewhat revolutionary and very controversial, but we publish them because the problem is of such importance that it is desirable that every constructive proposal should be examined. We should like to make it clear at the outset that we are not in agreement with some of the views propounded, but they are certainly stimulating. We fully sympathise with his criticisms of abstract planning and agree with his views that to enable the railways to compete on equal terms with road transport it will not be enough to cancel the

sections of the Railways Act, 1921 which restrict charges. We also agree that constructive legislation will have to be passed to stabilise the relationship between road and rail transport so that they can develop side by side and provide the public with organised reliable services.

We join issue with him, however, on the point that the railway grouping under the 1921 Act was never more than a temporary expedient to prepare the ground for complete unification. Neither do we assent to his proposition that there should be one railway system and one railway board. His proposal that the actual management of the lines should be carried on by the existing railway officers, working on a regional basis, makes no reference to the vital question as to how efficient and economical management would be secured in the various regions. It is difficult to see how this could be obtained without the compilation of regional records of receipts and expenditure, largely on the same basis as at present.

Although it is doubtless true that a reduction in expenditure might result from a complete merger of the four lines, our correspondent will doubtless recall the highly optimistic estimates made of the potential savings likely to be secured by the grouping in 1921, which, alas, proved to be very wide of the mark. Moreover, it does not necessarily follow that earnings would be maintained equally well by a unified undertaking as by four companies. He claims as an outstanding advantage for unification of the four undertakings that for the first time in the history of railways there would be a national policy for dealing with fundamental questions such as the electrification of railways. We suggest this may be more apparent than real, for the justification for such schemes must depend on the possibility of the earnings on any particular section being likely to pay a reasonable return on the heavy capital expenditure involved, and until the road-rail problem is solved any bold and far-flung schemes for electrification are unlikely to be executed.

Although we admire his enthusiasm in suggesting that once the lines came under unified control there would be an awakening all round with keen rivalry between administrative regions, our feeling is that such a friendly rivalry is more likely to be engendered by the maintenance of the four groups as individual entities, each with their own marked characteristics, than by their operating as parts of a common body with, to use his own words, common standards and uniform methods. We fail to see how the merging of individuality into one common standard is likely to stimulate keen rivalry.

It is common ground that the co-operation of the railway companies with the bus undertakings has been beneficial to both parties, and the public, and there is much to be said for his proposal that a limitation of profits should be imposed. Our correspondent fails to mention, however, what would be done by the Government with any excess profits taken by it under the scheme. Would they merely accrue to the national exchequer, or does he propose that they should be utilised for reducing charges on similar lines to the procedure laid down for the railways under the standard revenue provisions of the Railways Act?

His suggestion that the freight haulage industry should be organised on a regional basis, with discretion to the Regional Commissioners to allow such long-distance services as are desirable in the public interest, has much to commend it. We also agree with the proposal that road haulage charges should be brought under statutory regulation but this implies first the creation of a road rates structure on a regional basis and then its enforcement —two propositions which will not receive a very hearty welcome from many of the smaller road hauliers. Yet until some such arrangement is implemented by legislation there can be no hope of securing any co-ordination of road and rail services, whether the latter be run by the four group companies, under unified control or under nationalisation. We agree with his comments as to coastwise shipping, canals, docks, and air services and trust that publication of his proposals may contribute in some measure to a solution of the post-war relationship between rail and road in the interests of our national life.

## Mr. Train's Paper on L.N.E.R. Engineers' Department Organisation

IN our March 17 issue we published an extract from the paper on "Organisation in Relation to the Engineering Output and Efficiency on the London & North Eastern Railway," read before the Institution of Civil Engineers by Mr. J. C. L. Train, M.C., M.Inst.C.E., Chief Engineer, London & North Eastern Railway. That paper covers a wide field and gives information of particular value to the younger railway engineers. It is all the more interesting because the organisation, whilst incorporating details of basic railway practice commonly used on British railways, differs in broad principle in two main features. First, between the Chief Engineer and the District Engineers there is the intermediate level of Area Engineers, each of whom is responsible for control of a number of Districts. This arrangement is no doubt influenced by the previous existence of three separate engineering areas on the London & North Eastern Railway. Secondly, the inclusion of Signal & Telegraph work under the Chief Engineers is a practice on which opinion is divided, and although the close alliance of work on the ground might be ample justification for the arrangement, the trend towards power-operated signal boxes, etc., implies a high degree of specialisation.

The post of Assistant to Chief Engineer (Development) is, we understand, to cover research and research liaison; this is an aspect of considerable interest in view of the author's suggestion that a combined railway research station should be instituted. Such an arrangement should lead to a continuation of the principle of exchange of ideas and information, and enable extensive experimental data to be obtained under widely differing conditions of locality.

The average size* of a District quoted is in close alliance with the practice on other railways and the system of small, medium and large districts is applied to afford progressive training for the newly appointed District Engineer. The same principle is applied to Permanent Way Inspectors' Districts, affording training and an avenue of promotion. The reduction of duties to equivalents of 1 yd. of track is a useful yardstick for arriving at comparative manning of gang lengths, but this method requires special allowances to be made for particular features of the length under consideration such as density of traffic (with consequent idle time), water troughs, large stations, etc. The track-walker system is one which is widely adopted where a long length is maintained under the motor trolley system, but opinions vary as to the position of this man relative to the ganger. It is during the walking of his length that the ganger formulates his programme of work (unless the calendar system is in operation) and if this duty is delegated entirely to a track walker, the initiative of the ganger tends to become damped.

It is understood that the division of the system into primary, secondary, and tertiary lines, giving a classification of the lines for relaying, is adopted on several railways. The practice of laying new rails in important lines and removing after a loss of 10½ lb. for relaying in less important lines is again one on which some division of opinion exists, but we understand that on at least two other railways this is applied, the range of loss of weight being governed by the maximum axle load permitted on the class of route. In this connection the method of assessing weights of rail from calipered depths is one which is largely used and is reasonably accurate, provided this is coupled with allowances for side wear, chair galling and corrosion. Side wear may be computed readily by means of a simple "side-cut" gauge.

The method of relaying by means of ordinary steam crane, which has been developed by the L.N.E.R., is very interesting and where routes have three or more tracks is worthy of further experiment. It would appear difficult to apply this method where there are only two tracks as absolute occupation is required of both and the benefit of a shorter period and fewer occupations for carrying out the work may be outweighed by the necessity for complete stoppage of traffic during the period of relaying.

The calendar for systematic maintenance, we believe, has been the subject of research on the L.N.E.R. in one particular area for a considerable time, but there appears to be great divergence of opinion on the British railways as to the practicability of rigid adherence to such a programme when prevailing weather conditions in this country are taken into consideration. The standardisation of methods of maintenance, although giving uniformity, can reach the stage where initiative is suppressed, and one school of thought is of the opinion that display of this quality should be encouraged by delegation of authority and the uniformity of practice attained by the education of all ranks of railwaymen which, coupled with practical ability, renders the selection of individuals for promotion to be made on a sound basis.

Mention is made of the desirability of centralisation of stores, plant, concrete and creosoting depots on an area basis. Such a system is desirable from the point of view of standardisation and it is more possible to ensure even flow of manufacture and quality. The manufacture of permanent way components (switches and crossings) by a railway company is not a universal practice, a proportion of such work being carried out by outside contract. The centralisation of such work to one depot on a

* Mr. Train in his paper said: "The yard-measure for arriving at the ideal size of a District may include consideration of mileage in some form, or the number of men to be controlled. Experience is, however, as good a guide as any, and it would seem to point to a measure of 375 route-miles, perhaps equivalent normally to 650 single miles, whilst the employment of 1,500 men may form a pointer to the ideal intermediate size of a District

railway, we believe, is desirable as greater output control can be exercised on priority of requirements and emergencies can be met more satisfactorily.

## Operating Efficiency of the U.S.A. Railways: 21 Years' Progress

THE U.S.A. railways may justly be considered as a fundamental and integral part of the Allies' war machine. Over their 230,000 miles of main line they have been handling successfully a volume of traffic exceeding all records in the history of transport. The Association of American Railroads wisely takes the public into its confidence and lets it know the full facts about the astonishing performance which the railways are putting up. The lines are subject to unprecedented demands for the conveyance of armed forces and their equipment, munitions, raw materials and foodstuffs at a time when war conditions have disrupted other transport agencies. The Association recognises that no small share of the credit for the good work must go to the intelligent understanding and whole-hearted co-operation of railway users. One means of nourishing these helpful public relations is the publication of *A Yearbook of Railroad Information* containing comprehensive statistical tables and diagrams. A running commentary explains the trend of the figures so that the reader is likely to agree without hesitation that "America may well be proud of the record of her railways, essential in peace, indispensable in war and vital to victory."

The 1943 edition of the yearbook, published in October last, has just come to hand. We do not propose to discuss the actual results for 1942 or the 1943 estimates which it contains, as in our February 4 issue we dealt at some length with these matters under the heading of "American Railways and the War." We are sure, however, that it will interest our readers to see how the operating efficiency of the railways has been improved during the period of 21 years since 1921. In the paragraphs below the first statistic quoted refers in every case to 1942; the second figure relates to 1921, and the percentage rate of increase during the intervening period is given. There will be no need, therefore, to repeat under each head the years which we are contrasting and, as we are dealing with *average* figures throughout, we can dispense with that adjective.

America is first and foremost the land of huge freight trains. The paying train load has grown to 1,035 tons as compared with 651 tons, an increase of 59 per cent. These loads were carried in 52 wagons and 37 wagons respectively, an improvement of 39 per cent. Further, the modern wagon has a capacity of 50·5 tons, whereas the old wagon held only 42·5 tons—a difference of 18 per cent. The freight train speed (including all stops made for shunting, attaching and detaching, or any other cause) was 15·8 m.p.h., an advance of 37 per cent. on 11·5 m.p.h. A higher speed of 16·7 m.p.h. was attained by freight trains in 1939 and 1940, when passenger-train mileage was low, but it may be recalled that density of traffic and short hauls have prevented our own railways from ever exceeding a freight train speed of 10 m.p.h.

Four more high records show that there was no lack of mobility on the American railways in 1942:—

(1) each active freight locomotive travelled 122 miles a day, an improvement of 75 per cent. on 78 miles a day;

(2) each serviceable wagon moved 48·8 miles a day, an increase of 89 per cent. on the low daily mileage of 25·8;

(3) each serviceable wagon performed each day a service equivalent to carrying 975 tons for one mile, an advance of 118 per cent. on 448 ton-miles;

(4) each freight train performed each hour a service equivalent to carrying 16,135 tons for one mile, an increase of 115 per cent. on the hourly ton-mileage of 7,506 for 1921.

All this expeditious movement of freight traffic was done in return for a charge to the public of less than 1 cent per ton-mile, a reduction of 27 per cent. over the period which we are reviewing. During these 21 years many prices have risen sharply and the earnings of railway employees reached a new peak of $2,307 a year, which is 32 per cent. above the level of the prosperous year of 1929. Such noteworthy achievements would not have been possible without the steady investment of enormous sums in railway track and equipment of all kinds. The amount invested per mile of line stands at $113,364 as compared with $84,530 in 1921, an increase of 34 per cent. The total investment in railways and equipment is now about 25,669 million dollars, representing 8,000 million dollars more than their net capitalisation, or, in other words, than the total amount of railway securities, stock and unmatured funded debt, outstanding in the hands of the public. It follows that net capital represents 68 per cent. of the total investment in railways and equipment. Clearly there are no grounds for raising the old cry of "watered stock" against the railways, but there are still prominent politicians in the States who denounce the railways as though they raised unreasonable charges, oppressed traders and were the enemies of industrial progress. The best answer to such wild talk is to put the public in possession of the real facts, based on official statistics, and the issue of this handy *Yearbook of Railroad Information* seems to be an excellent way of effecting that purpose. The brochure tells us much more about the position in America than we are permitted to know about the working of our own railways, and we cannot help feeling that the Association of American Railroads is wise to publish particulars which are studiously suppressed by our Ministry of War Transport.

## Springs and Suspension

ELASTICITY as an inherent property of matter, by virtue of which it tends to return to its original shape and dimensions after the removal of applied forces exercising pressure, tension, or distortion, applies in varying degrees ranging from the obvious visible action of rubber to the far less obvious, and less well realised, behaviour of cast-iron and copper. Springs are employed for two different reasons, namely, (*a*) the temporary storage of energy, as with the old military catapults or with modern clockwork motors, and (*b*) as shock dissipating components such as the bearing springs on rolling stock for lessening the effects on the vehicle of track inequalities, or as buffing springs for absorbing the collision impact in vehicles. The earliest traceable applications of springs are as storers of energy, and it was not until many centuries later that the spring became a recognised vehicle component for the momentary absorption of travelling shocks. Although suspension is a fundamental of modern mechanical engineering, its design, broadly, lags far behind that of many other features, and many of the charts, curves, and formulæ which continue in use were prepared in a period when the results of much modern research were unknown. Technical literature on the subject of springs and suspension is neither extensive nor well codified, and it is not too much to say that there would be a sore gap but for the great work of the late Thomas H. Sanders, formerly Technical Director of Jonas Woodhead & Sons Limited, who so closely identified himself with the subject of springs that the name of one invariably suggests the other. In fact, his published works on springs and suspension provide such a lasting monument that we had no hesitation in saying in our issue (January 29, 1943) at the time of his death that "'Sanders on Springs' will provide a parallel to "Tratman on Track."

These thoughts are occasioned by the fact that Volume II of the last work by Sanders has recently been issued by the Locomotive Publishing Co. Ltd., completing "Springs: A Miscellany." Twenty years ago Sanders published "Laminated Springs," and followed it in 1930 with "Springs & Suspension." Then, after the outbreak of war, it became known that he was completing a trilogy with a two-volume work entitled "Springs: A Miscellany," the first volume of which appeared in 1941, and was reviewed in our issue of August 15 of that year (page 156). It was a work of such importance that the failure of Volume II to appear would have been a technical tragedy. Happily, Sanders passed the final proofs a few days before his death, and we now have before us a work upon which the author's fame will rest, and which is no mean contribution to technical progress. This Volume II is not sold separately, but is included in the price of £2 10s. for the set. Moreover, it is in no sense a separate volume, excepting in the purely physical inclusion of pages 458-1056 within separate covers for ease of handling. Volume II contains chapters XIV-XXII, an appendix of miscellaneous information, and a comprehensive index. It covers combination machines and fatigue testing, dynamic deflections, the derailment of vehicles, descriptions of recent machinery and recent spring improvements, descriptions of recent railway suspensions throughout the world, and some notes on such miscellaneous spring applications as safety valves. In addition, there is a chapter entitled "Some Historical Aspects." in which generous tribute is paid to the research work of Charles. E. Lee. The breadth of treatment adopted by Sanders is such that "Springs: A Miscellany" may receive less prominence than would have been the case had the work been less exhaustive, or contained (or omitted) matter which might have resulted in spirited correspondence and controversy. Nevertheless, it is unlikely that any future author will venture to write authoritatively on the subject of springing without making reference to the works of Sanders, and we count it fortunate in the technical sense that he was able, despite war and other difficulties, to bring his life's work to a successful conclusion.

# LETTERS TO THE EDITOR

*(The Editor is not responsible for the opinions of correspondents)*

## Free Wheels for Rolling Stock

Thaxted. April 5

To the Editor of The Railway Gazette

Sir,—The article on "Free Wheels for Rolling Stock" in your March 24 issue reminds me of the view taken by the late Sir Arthur Yorke of the possibilities in that direction. I had just published "The Future of the Railways," which had had the good fortune to interest him, and about 1928-29 he sometimes called to talk railways. It was on one of these occasions that he adverted to the possibility of applying the free wheel to railway trucks.

You will recollect that Sir Arthur Yorke was Inspecting Officer of Railways for the Board of Trade from 1892-1900; at the time of which I write he was a member of the Great Western Railway board. His experience in all railway matters was immense and the interest he took in the railways might almost have been termed devotion.

It was Sir Arthur Yorke's opinion that a very considerable saving in fuel would be achieved if freight wagons could be equipped with free wheels. Your article was, of course, largely concerned with passenger stock and locomotives, but I cannot recollect that Sir Arthur Yorke ever mentioned the topic except in connection with freight wagons. He argued that as things stood, two wheels out of the four had a braking effect at every curve. At that time Mr. C. B. Collett reigned at Swindon, and Sir Arthur Yorke had had some correspondence with him on the subject, but I gathered had been unable to convince him that his proposal was practicable. I inquired what was the difficulty and he replied that he presumed it was a matter of the strength of the axle. Freight wagons, of course, were subjected to great strains in shunting. However, he was not convinced that the project was impracticable; the motorcar had solved the problem, and the railway wagon, he thought, could likewise do so.

Yours truly,
ASHLEY BROWN

## Wolverton Refreshment Establishment

Northwood, Middlesex. March 21

To the Editor of The Railway Gazette

Sir,—There is a detailed and amusing account of these refreshment rooms when managed by Mrs. Hibbert, on pages 85-89 of "Stokers and Pokers, or the London & North Western Railway," published anonymously in 1849. Sir Francis Head, who was the author, gives a list taken from the company's books of the average annual consumption at the Wolverton refreshment rooms. The items given include "182,500 Banbury cakes, 56,940 Queen cakes, 29,200 patés . . ." and he states, "to the eatables are to be added, or driven, the 85 pigs, who after having been from their birth most kindly treated and most luxuriously fed, are impartially promoted, by seniority, one after another, into an infinite number of pork pies."

In "Rambles on Railways," published in 1868, Sir Cusack Roney refers on page 224 to the Wolverton refreshment rooms in the decade following 1840, which he regards as its palmy days, and calls Mrs. Hibbert "the great inventress of the railway refreshment room as it should be." He also mentions that she was known at Wolverton and elsewhere as *Generalissima*.

About the same time, the refreshment rooms at Swindon came under the lash of I. K. Brunel, who wrote:—"I have long ceased to make complaints at Swindon. I avoid taking anything there when I can help it," quoted in MacDermot's "History of the Great Western Railway," Vol. 1, p. 155.

Yours faithfully,
REGINALD B. FELLOWS

## Through Running in the United States

The New York, New Haven and Hartford Railroad Company,
New Haven 6, Conn., U.S.A. January 18

To the Editor of The Railway Gazette

Sir,—I was interested in the short article on page 574 of the December 10 issue of the *Gazette*, entitled, "Co-operation for Passengers' Comfort," this referring to reluctance of many railroads in the States to allow their passenger equipment to pass beyond the limits of its owner's metals.

In referring to certain recognised through routes you have left out the one which I believe is very nearly the oldest, if not the oldest, such arrangement in the United States. I refer to the route between Boston and Washington *via* the New York, New Haven and Hartford and Pennsylvania Railroads.

Through equipment was started in operation between these points on May 8, 1876, and through service has continued from that time until the present. Originally the cars were transferred from Harlem River, New York, *via* the East and North Rivers to the Pennsylvania Railroad at Jersey City on steamers built especially for the purpose. On October 18, 1912, the route *via* New York was discontinued, but through service from Boston to Washington continued *via* the New Haven to Maybrook, New York; Lehigh & Hudson River Railway from Maybrook to Belvidere, N.J; and from Belvidere to Washington *via* the Pennsylvania Railroad. This route was again changed to the so-called Hell Gate Bridge route upon the completion of the Hell Gate Bridge, which was opened for passenger service in April, 1917.

This information is not given in any critical sense, but it occurred to me that it might be of interest to know of this very old through interline service in the United States.

Yours very truly,
S. F. MACKAY,
General Superintendent of Transportation

## Smokebox Char

Camosan, Berks Hill, Chorleywood,
Rickmansworth, Herts. April 1

To the Editor of The Railway Gazette

Sir,—I was interested to read the note in your current issue as to the use of the above. The writer was responsible for an extensive use of smokebox char in pumping and electric generating stations during the last war which resulted in a saving of some 30,000 tons of coal during the period of Government control. The use of char was first tried in suction-gas plants in which, however, it was not altogether successful on account of the producers requiring increased attendance.

It was next tried by the writer's predecessor in charge of generating stations on the Midland Railway successfully, and after development of shortage and high prices of coal during the war its use was extended by the writer, who was then in charge of the stations, to all of them, they then numbering some 17. They were practically all equipped with locomotive boilers and the only modification that was made in these was to fit them with fire bars of narrower spacing than that used for ordinary coal. A number of the plants, including especially those at Leeds and Sandon Dock, got up to the point of using smokebox char exclusively.

The interest of the staff in using char was stimulated by the institution of a bonus system which increased earnings in accordance with the proportion of char to coal used, and of consumption per unit generated or per thousand gallons pumped. Incidentally, the effectiveness of this was shown by a complaint on the part of the staff of one plant of a leaky pipe joint during the first week of its operation.

Char continued to be used at all of these stations after the war until most of the smaller ones were shut down in favour of public supply, but a proportion was still in use in the Derby Power Station at least up till the time of the writer's retirement.

The calorific value varied from some 6,000 to (exceptionally) 9,000 B.Th.Us; the best char came from engines working heavily-graded sections, such as in especial the Bromsgrove engines working the Lickey incline. The sulphur content was rather hard on the firebox material, which in most, if not all, cases was copper.

Yours faithfully,
J. DALZIEL

## Continuing Process in Railway Evolution

8, Lampton Avenue, Hounslow,
Middlesex. April 3

To the Editor of The Railway Gazette

Sir,—It is probably in an attempt to escape from the narrow circumspection of our wartime lives that the imagination turns so readily towards future development and reconstruction. This is a good thing, for at no time in the history of mankind will there have been greater need for constructive planning than after this most destructive of all wars. At the same time, it appears desirable to curb our enthusiasm a little, to avoid change simply for the sake of change, and to apply the guiding principle of development rather than replacement. In particular do I feel it desirable in this connection to clarify the mind with regard to those three overused, misunderstood words, propaganda, nationalisation, and standardisation, all of them, be it noted, well to the fore before the war: there is little new in the language of reconstruction except its intensity.

Propaganda, in its best sense of interesting and educative advertisement, will be a great weapon in the hands of the railways after the war, and your correspondent, Mr. R. L. Wilkins, deals admirably with this theme in this week's issue.

On the subject of nationalisation I note a growing tendency to speak in the abstract, as if the nationalisation of all industry

and commerce was invariably the subject under discussion. Surely we are all in favour of nationalisation up to a point, for the handling of certain public services by private enterprise is obviously unthinkable, and the question boils down to one of degree, which suggests that much hot air is wasted on ascribing to it definite political implications. I must confess that many years' experience of local government and some contact with the Civil Service do not endear me to the cause of nationalisation except for those services where private enterprise could not, or has failed to fulfil public needs. I find no case for nationalising the railways.

Standardisation is a word of more practical and particular significance, and can be a good or bad thing. It is good if it induces a quickening of the pulse of industry, it is bad if it puts up a bar to progress. Frequently, of course, the question is not one of standardisation at all, but interchangeability. It is in this sense that the word is often applied to locomotive construction, for few C.M.Es. have shown any desire to adopt the standards laid down by their predecessors, and since the life of a C.M.E. (as a C.M.E.) is, on an average, less than the life of the locomotive he designs, it follows that at any given time there will be a majority of non-standard engines on any railway. Only on the G.W.R., which has had the great good fortune (or foresight?) to have but six C.M.Es. in a hundred years (and to a lesser extent on the old G.N.R.) do we find a "continuing process" of evolution. In most other cases the new broom has swept so clean that only economic considerations have prevented a complete extinction of existing types. Standardisation in other rolling stock is more logical. Wagons are a particular case in point, though in the case of passenger coaches, man's natural desire for variety suggests that we shall see little application of the principle as far as decoration is concerned. I cannot think that the railways will follow the call of some of our younger town-planners who would lay out our land in appalling monotony with but 5 (or is it 7?) types of houses.

Past experience suggests that our railway authorities will approach their reconstruction problems with commendable restraint. It is to be hoped that they will also be imbued with some spirit of adventure, so that too great an emphasis is not laid on economy, for economy is the murderer of enthusiasm.

Yours faithfully,

C. L. LINDLEY

## The Life of Diesel Locomotives

Epsom, Surrey. April 5

To the Editor of The Railway Gazette

Sir,—The point made by Mr. C. E. Fairburn, Chief Mechanical Engineer of the L.M.S.R., in his paper dealing with the diesel-electric shunting locomotives in use on his line, and read before the Institution of Locomotive Engineers on March 22, that the engines could be kept in service for at least 30 years on an economic basis, so far as concerns overhaul cost, was probably the most important feature of a very interesting address. This was appreciated by several who took part in the discussion after the paper. In the abstract of the paper, which was published in your March 31 issue, and the summary of the discussion in your next issue, however, little reference was made to other factors which may have had an influence on the true economic life of these and similar locomotives, although Mr. E. P. Paxman thought that "it might be found economic to scrap the locomotives within 30 years."

This is in no way a reflection on the efficiency or usefulness of the diesel-electric shunting engines in use on the L.M.S.R., but rather may be a tribute to the progress which is being made by the diesel traction manufacturing industry at the present time. In comparison with the steam locomotive, the diesel is still in a state of comparatively early development, and for this reason there is, perhaps, greater scope for improvement and progress in design. There can be no doubt that during the war there has been a marked development in various aspects of diesel-engine design, and many of the improvements which have been effected for war purposes will be available with the return of peace for incorporation in engines for traction purposes.

In this respect, perhaps, the diesel-powered traction vehicle, whether locomotive or railcar, may be more closely analogous to the motorcar than to the steam locomotive. Although at any time within the past decade it would, no doubt, have been possible to produce a motor car with a life of 30 years, it is unlikely that it would have been an attractive proposition in view of the developments reasonably to be expected, and which have, indeed, taken place, in that time—developments which in all likelihood may be continued and exceeded in the ten years after the war. Although, therefore, in 30 years' time the L.M.S.R. diesel shunters on present standards may be in good and serviceable order, it may well be that the then modern diesel shunter will have made it economic to relegate them to less important functions than those they are now performing.

The excellent trouble-free service which British-built diesel trains are giving in various parts of the world under difficult conditions, is an excellent augury for the post-war development of this form of traction. I need refer only to the details which appear in the current issue of your *Diesel Railway Traction Supplement*, relating to the operation for the past six years on the New South Wales Government Railways of five diesel locomotives, which operated over 250,000 miles before the first engine overhaul.

The ability of diesel-powered trains to operate services over long distances, of waterless country in particular, makes them well fitted to play their full part in the post-war railway development in many of the countries in the Middle East, particularly, perhaps, in Egypt, Palestine, Iraq, and Persia.

Yours faithfully,

B. W. C. COOKE

## Argentine Railways and Housing Problems

April 8

To the Editor of The Railway Gazette

Sir,—The article published in *The Railway Gazette* of April 7 under the heading "Argentine Railways Solve Housing Problems" appears to assign the whole of the credit for evolving the railwaymen's housing scheme to a law passed by the Argentine National Congress in 1924. As a matter of historical fact, however, a scheme for advancing funds to railwaymen to enable them to purchase land and to build homes thereon was instituted by the Buenos Ayres Western Railway 20 years previously, when it was constructing its locomotive, carriage and wagon workshops at Liniers, about 8 miles from its terminal station in Buenos Aires. At that time the district consisted almost entirely of open fields or market gardens, and no accommodation was available within two or three miles of the new workshops for the thousand or so skilled hands who would have to be transferred from the old workshops at Tolosa, some 35 miles away in the direction of La Plata.

To solve the problem, the railway company offered each hand an advance of funds sufficient to enable him to purchase a plot of land and build a house thereon, subject to the site of the plot and its cost being approved by the company and the construction of the dwelling being supervised by the company's Chief Engineer. The properties were mortgaged to the company, and amortisation was effected by monthly deductions from wages. When amortisation was completed, a clean title was given. The scheme was so successful and beneficial that, by general request, it was subsequently extended to all classes of employees. The amounts of the advances varied with the wages or salaries of the applicants, so that each was able to become the possessor of a home proportionate to his financial capacity.

A few of the other railway companies followed the example of the B.A.W.R. long before the passage of the Law referred to, and "mortgage loans to staff" still appear in some of the balance sheets. It may be said with absolute truth that in all essentials the Government scheme is an exact copy of the original scheme of the B.A.W.R.

Yours faithfully,

TALLERES

## Publications Received

**Company Museums.** By Laurence Vail Coleman. Washington, D.C., U.S.A.: The American Association of Museums. 9¼ in. × 6 in. viii + 174 pp. 18 half-tone illustrations. Price $2.50 net.—In the U.S.A. 80 companies are known to have museums of their own. These belong to railways, industrial corporations, commercial houses, newspapers, banks, and similar undertakings. Some relate particularly to the history and work of the company, whereas others represent more generally the development of the industry of which the particular company is a unit. Company museums, as understood by the author, who is Director of the American Association of Museums, are wholly distinct from sales exhibits and advertising displays; they are not momentary creations, but are permanent and growing establishments. Such museums are used for business reference and public relations, and represent a valuable contribution to culture which cannot be made entirely in any other way. There is a vast difference in practice as to the admission of visitors, as some of the museums are kept primarily for internal reference, whereas others are used to interest the public in products of the undertaking.

The appendix of this volume describes 80 company museums in the U.S.A. and three in Canada. The railway museums are those of the Baltimore & Ohio Railroad, the Denver & Rio Grande Western Railroad, the New York Central System, the Norfolk & Western Railway, and the Union Pacific System. We commend this book as a guide to those who have museums of this kind to manage.

# The Scrap Heap

Some 210,000 tons of sugar beet have been carried by the G.W.R. during the past season to two factories on its system.

* * *

Employees of the L.M.S.R. at Broad Street Goods Depot have raised £150 to endow a hospital bed in Stalingrad. The cheque has been handed to Professor Sorkisov, Chief of the Russian Red Cross & Red Crescent.

* * *

An interesting relic of Paddington Station is being scrapped in the national interest. This is the sliding platform which many passengers will remember as having been in use at Paddington 25 years ago to enable passengers to cross from No. 1 to No. 2 platform, opposite the main booking office, thus saving them the trouble of using the subway or walking round *via* the "lawn."

* * *

In four years, scrap metal collected by the L.M.S.R. staff from the company's premises and permanent way amounts to 17,842 tons. This excludes material in connection with normal construction and maintenance work, which is used internally for the production of parts, or is sold. In the same period, 13,163 tons of paper has been salvaged, and a million-and-a-half empty bottles collected.

* * *

ANOTHER ALIBI GONE

An Argentine Government decree gives a husband arriving late for dinner in the suburbs of Buenos Aires the perfect excuse for his wife. The decree orders that the railways must give passengers on a train which is late "late train certificates," stating the train's time of arrival and the number of minutes it was behind schedule.—*From the "South African Railways & Harbours Magazine."*

* * *

NIGERIAN DAYS: WESTMINSTER NIGHTS

Overseas friends and colleagues of Sir William Hunt, former Chief Commissioner of the Southern Provinces of Nigeria, may be interested to know that he has found some very strenuous work in his retirement as Fire Prevention Officer for the City of Westminster, an area which, incidentally, includes the editorial and publishing offices of *The Railway Gazette*. Sir William's memory is perpetuated in Nigeria by the Beyer-Garratt locomotive which bears his name, and of which an illustration is reproduced below. So far, we have not learned that a London fire engine has been similarly named, but we can testify to the fact that Sir William himself is still highly mobile! He works so intensively and so long at his duty of supervising the training and organisation of the Fire Guard that he frequently has to sleep "on the job."

With Aunt Bec there was the memorable outing to Ipswich. This involved his first ride in a train; only a few miles, but miraculous. How many children got their earliest notion of England's quiet beauty from the photographs of scenery framed in railway carriages, at exactly the right height to be studied by standing on the seat.—*From "Thorofare," by Christopher Morley.*

* * *

P.R.Os.

"I would back any sub-editor in Fleet Street to produce a better document than could ever come out of the Psychological Bureau of an army," writes Sir Ernest Benn, criticising a leaflet fired into the German lines.

Sir Ernest's view is that the country is spending £1,500,000 on Public Relation Officers to keep us in ignorance of the failures of the departments to which they are attached.

"They overlap in everything they do, the work of the redundant Ministry of Information. Some of them have set up branches all over the world, and the sum total of their effort is to reduce the nation to a condition of general ignorance."

He continues: "The *Daily Express* says there are six times as many P.R.Os. as there are journalists in Fleet Street—a striking condemnation of the whole system. The P.R. offices attached to civil departments like the Home Office or B.O.T. should be shut up, for their business is simply to boost Mr. Morrison and Mr. Dalton. They do it extremely well, but at a hundred times the cost of an average Press agent to a film star."—*From "The Newspaper World."*

CURRENT GERMAN NEWS?

Exactly a year ago, in its issue of April 7-14, 1943, *Die Reichsbahn* gave as its frontispiece a picture of Hitler visiting

wounded in an ambulance train; this was issued, of course, in connection with his birthday on April 20. The identical picture was published in *The Railway Gazette* of Sepember 15, 1939 (page 378).

* * *

TAILPIECE

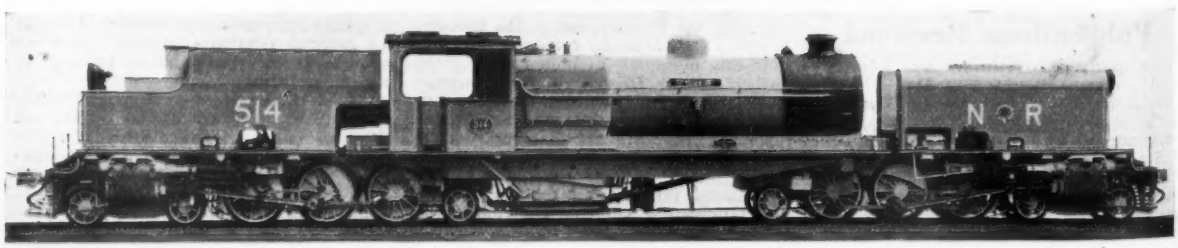
*(A Discussion Group of the Institute of Transport has been inaugurated at Reigate)*

Every subject under heaven
In debate is kept in view
By a generation given
Half the world to build anew.
This applies to transport too.

What of town and country planning?
How extend, co-ordinate?
What of road and railway manning?
What of transport and the State?
All these things they ventilate.

Every theme beneath the heaven
Weight of argument will bear.
It is good that men be given
Chance to argue what and where.
Let discussion clear the air!

E. C.




*Beyer-Garratt locomotive of the Nigerian Railway named "Sir William Hunt," who was formerly Chief Commissioner of the Southern Provinces of Nigeria, and is now Fire Prevention Officer of the City of Westminster. This engine was built in 1938*

# OVERSEAS RAILWAY AFFAIRS

*(From our correspondents)*

## SOUTH AFRICA

### Wagons for Wine Conveyance

A scheme for the construction of special wagons, similar to those for the conveyance of petrol and syrup, for carrying wine from producing centres is being considered by the Railways & Harbours Administration. Headquarters officials are interviewing leading members of the wine trade on the subject. The vehicles would be constructed from special materials, such as stainless steel and plastics.

### Employment for Demobilised Soldiers

The Railways & Harbours Administration has announced officially that, in addition to its own 14,000 men on active service, about 2,500 others now with the Forces will be absorbed into various branches after the war.

The Minister of Transport recently asked the Salaried Staff Association whether he could rely on its support in this connection, in view of the fact that the men could not be expected to start as apprentices or labourers if they had held higher positions before the war. On behalf of the Association it was stated that the executive committee supported the suggestion; and that the views of the divisional committees throughout the country had been obtained, which were to the effect that if the proposal was of limited application the salaried staff would support it.

### Railway Staff Committee

The Railways & Harbours Staff Advisory Committee, which has been elected by the Federal Consultative Committee of the Railway Staff Association, recently met the Prime Minister at Cape Town. (The committee has been formed to consult with the Prime Minister on major problems affecting South African labour, of which railwaymen constitute an important section).

Among the subjects discussed at the recent meeting were the effect on the Railways & Harbours service of legislation initiated by other Government departments; social security; the representation of members of the Railways & Harbours' staff on any boards and committees the recommendations of which might affect them; the cost of living; and price control. The delegates urged the Prime Minister to agree to the formation of a standing joint committee of public and railway servants to deal with all questions affecting the cost of living. They also urged that the Government should exercise a much stricter control of prices and should take measures to avoid the dumping of inferior goods in South Africa. The Minister of Transport also was present at the discussion.

### Railway Catering Achievements

The Catering Department of the South African Railways & Harbours Administration achieved a record during 1943 by serving an average of 10,420 meals a day. The total for the year of 3,803,190 meals included 1,358,765 served to military personnel. Revenue amounted to £1,462,777, and expenditure to £1,178,451.

The Catering Department is responsible for all catering arrangements in trains and refreshment rooms on railway property throughout the Union and South West Africa, and on the section of railway line between Bulawayo and the Union. The Department also supervises 270 sub-let concessions, and provides catering and bedding facilities on the Governor-General's train and on all private saloons and coaches; it conducts the catering arrangements in the Houses of Parliament at Cape Town. The Department provides bedding, laundry and cleaning services on all trains.

## UNITED STATES

### Signalling Progress in 1943

Over a total of 1,580 route-miles, various railways replaced old semaphore automatic block signals with modern light signals during the course of 1943. In some cases the light signals were installed on the existing posts, but in others (for example, on the New York Central System) all the old signalling, including the line-control circuits, has been removed and replaced by the most modern form of coded track circuits with no line-control wires.

Altogether, during 1943, 1,139 signals were installed on new projects, and 1,551 as replacements—a total of 2,690, as compared with 1,421 in 1942, and 1,017 in 1940. In addition, 1,498 signals and switches were installed at new interlocking plants, 760 at rebuilt plants, and 55 at automatic plants, or 2,313 in all, compared with 1,417 in 1942. There was a considerable increase in the installation of spring-switch mechanisms—448 as compared with 284—mainly at the ends of passing loops, and where double lines converge to single.

The installation of level-crossing protection equipment was less than in 1942, for the War Production Board took the view that restrictions on road traffic made this work less urgent. As a result, measures for crossing protection, such as flashing lights, wig-wag signals, rotating discs, or traffic lights, with or without electrically-operated gates, were installed only at 206 crossings, compared with 530 in 1942 and 1,120 in 1941, and chiefly in the vicinity of war industrial plants or military camps.

### Improvements on "Frisco" Lines

The St. Louis-San Francisco Railway has been authorised by the District Court at St. Louis, Missouri, to spend approximately $2,500,000 on line improvements during 1944. One of the principal items is $844,869 for the construction of 4½ miles of new trackage from the Gasconade River Bridge to Franks, Missouri; this will eliminate eleven curves, ease the gradients, and reduce by one mile the distance between Newburg and Dixon, on the important St. Louis-Springfield main line.

### Locomotive Building in 1943

A total of 1,012 locomotives was delivered during 1943 from railway or private works in the U.S.A. Of these, 434 are steam locomotives, 556 diesel-electric, and 22 electric—a striking change from 1941, when the proportions were 293, 937, and 38 respectively. Of the steam units, 333 were required for freight service, 61 were specified as for mixed traffic, and the remainder were for shunting and miscellaneous tasks. Just over 100 of these were built in the railways' own shops, and the remainder by outside firms.

Among the larger orders were 25 2-10-4 and ten 4-8-4 locomotives for the Atchison, Topeka & Santa Fe; 40 2-8-4 and ten articulated 2-6-6-6 locomotives for the Chesapeake & Ohio; 25 0-8-0 shunting, and 25 4-8-2 mixed-traffic, engines for the New York Central; 30 2-8-4s for the New York, Chicago & St. Louis; 20 4-6-6-4, five 4-8-8-4 articulated, and ten 4-8-4 express locomotives for the Union Pacific; and 85 2-10-4 freight engines for the Pennsylvania, built in that company's Altoona shops.

By order of the Office of War Production, the building of diesel locomotives for passenger service was stopped, and, with certain exceptions, construction for mixed-traffic, freight and shunting service only was permitted. Of the diesels, therefore, only 133 were of the larger types; three of 6,000 b.h.p.; 70 of 5,400 b.h.p.; 38 of 4,000 b.h.p.; and 22 of 2,000 b.h.p.; the remainder were all of 1,000 b.h.p. or less (the 1,000 b.h.p. units predominated).

(*See editorial note, page* 379).

## FRANCE

### Perishable Traffic

As from October 1, 1940, the organisation of perishable traffic on the French railways has been in the hands of the Société Française des Transports et Entrepôts Frigorifiques (S.T.E.F.), a subsidiary undertaking of the Société Nationale des Chemins de fer Français (S.N.C.F.); the latter owns 98 per cent. of the share capital of the S.T.E.F. The placing of this traffic under a single control was said to be for the attainment of a more rational use of refrigerator vans than had been possible previously. Traffic of this type was at a standstill in June, 1940, but the supply of Paris and surrounding districts with foodstuffs by means of refrigerator vans began in a tentative way in July, under the control of the Comités Centraux de Ravitaillement of the Service de Ravitaillement Général. In contrast with the previous policy on the part of private concerns of undertaking the supply of Paris and other large towns regardless of distances, the scheme became one of haulage and avoiding cross-traffic. The shortage all over the country was an incentive to minimise the chances of foodstuffs perishing in transit.

It soon became apparent that the number of refrigerator vans available was not sufficient to meet the increased demand, and a priority system was introduced, in addition to measures for speeding up turn-round. Empty returns had to be avoided as far as possible, and return loadings were made compulsory in a number of instances. Although these and other endeavours admittedly met with difficulties the results achieved in 1942 were better than those of 1938. Perishable traffic handled in the former year amounted to 660,478 metric tons, compared with 597,537 metric tons in 1938. Milk accounted for 174,528 metric tons in 1942, vegetables for 125,510 metric tons, fresh fish for 66,038 metric tons, and frozen fish for 1,311 metric tons; fresh and frozen meat represented 68,814 and 58,975 metric tons, respectively.

The conveyance of fresh fish has decreased since, due to the restrictions on sea fishing. The carriage of fresh meat was discontinued for a time, but this policy has now been reversed, as it has been found more desirable to supply fresh meat to towns than live-stock. The conveyance by refrigerator vans of cheese and butter, a traffic which in pre-war years had increased considerably in the south and south-west of France, has not regained its previous importance. On the other hand, vegetable and fruit traffic originating in the area between Marseilles and Avignon is said to have attained considerable importance. Goods not previously sent by refrigerator van, such as potatoes, are now being dispatched in vehicles of this type to an increasing extent. Government regulations have made compulsory the use of refrigerator vans for a number of perishable goods.

# London Passenger Transport Board Signalling Practice*

## *Summary of Discussion on Paper read before the Measurements Section of the Institution of Electrical Engineers by Mr. R. Dell, Signal Engineer, L.P.T.B., on March 17*

AT a meeting of the Measurements Section of the Institution of Electrical Engineers, held in London on March 17, with Mr. E. W. Moss in the chair, Mr. R. Dell, Signal Engineer, London Passenger Transport Board, read a paper on signalling practice on the Board's lines. At the Chairman's request he prefaced his reading of the paper with a few remarks on the general principles of signalling. Lantern slides were shown.

The discussion was opened by Mr. L. H. Peter, Chief Engineer, Westinghouse Brake & Signal Co. Ltd., who said that the paper gave a review of the way in which signalling had progressed on the Underground's lines over the last 40 years. Principles had remained practically the same but many changes of detail had been witnessed in circuits and apparatus, which were specially adapted to L.P.T.B. requirements and were not always what would be used in main-line service. He commented on the advantages claimed in the paper for the fourth-rail traction system and thought they would have been less apparent if the signalling were worked at a higher a.c. frequency, which would reduce both weight and cost of the equipment. He thought that the coded track circuit would offer means of getting even greater security against false operation, while opening the way to the provision of cab signals, direct speed control and other refinements.

He also criticised some details of the air-supply arrangements and the failure to employ B.S.I. symbols in the paper. The reliability of the modern equipment was remarkable and the number of failures compared with train mileage showed how well the traveller was protected. The maintenance staff was deserving of great praise.

Mr. F. H. D. Page, Signal & Telegraph Engineer, G.W.R., thought the paper gave a very clear account of the way in which the L.P.T.B. engineers had dealt with their own particular problems. Signal engineers were responsible for the safety of the public and signal circuits had not only to perform functions but to prove also that apparatus worked correctly. Complication should be avoided, wherever possible. The problem was how far to go. He questioned the necessity for some of the things shown in the paper. Main-line conditions were different and the methods of cabling used by the L.P.T.B. were not practicable there. They had also to employ power supplies from outside, while all-electric operation had to be used very often, from force of circumstance, even though they might wish otherwise.

They had not had a great deal of trouble on the G.W.R. with lead-sheathed cables, but rats did a certain amount of damage. Had the L.P.T.B. ever considered automatic train running, as seen on the P.O. (London) Railway?

Mr. E. G. Brentnall, of the L.N.E.R., referred to the question of electro-pneumatic and all-electric working and the provision of two sources of power, ruled out frequently by local conditions, as well as the details of light signal design and relay construction. He also referred to the question of cables and earths as did Mr. S. W. Melsom, of the Cable Makers' Association.

Mr. H. H. Dyer, of the L.M.S.R., could not agree with Mr. Dell's views on cabling, and considered the practice with multi-core cables on the main line had proved quite satisfactory. The cost of the L.P.T.B. arrangements was not justified in their case. He also referred to the choice of frequency, as did Mr. A. W. Woodbridge, of the G.W.R., and the 4th rail system. Mr. S. A. Stevens, of the Westinghouse Brake & Signal Co. Ltd., discussed the problem of fault detection and the safety of signal circuits. Mr. Dell briefly replied to the points raised and was accorded a hearty vote of thanks.

* Editorial reference to Mr. Dell's paper was made in our March 24 issue

# Simplified Siding-Track Formulæ

## *Formulæ for use in the design and setting out of ladder tracks for siding groups*

*By A. Preston*

VARIOUS formulæ have been compiled for the design of "ladder tracks" for sidings, and those the author has seen so far have entailed the use of leads with special lengths for the stock rails and/or crossing rails. Consequently, for two separate groups of sidings using similar angles of crossings and switches, but each group having different uniform spaces between the sidings, the switches and crossings manufactured for one group could not be used for the other.

As the main-line railway companies have standard switches and crossings with predetermined overall lengths, the above type of formulæ cannot be used without departing from the set standards, and this led the author to compile the following formulæ.

In the author's opinion, groups of sidings should be designed so as to reduce to the lowest the number of curves. The adoption of the formulæ set out on the opposite page will eliminate reverse curves and so make a reduction of almost 50 per cent. in the number of curves, compared with some other forms of layouts. Apart from the desirability of reducing the rolling friction of vehicles, there is a clearer view for the operating staff of the routing of wagons through the ladder track. Further, the permanent way maintenance will be simpler and the wear of materials will be less when curves of similar flexure are employed.

It was with this in mind that the author introduced the two conditions, namely (1) that $(r_1)$ be equal to or less than $(R_2)$ and (2) that $\alpha$ be equal to or less than $(\theta$—N1). With the first condition it will be seen readily that the track in the lead to siding B must either be straight or a curve of similar flexure to curves $(r_1)$ and $(r_2)$. If the second condition were not adhered to, and standard leads not departed from, it would be possible for the crossing N2 to be placed on the far side, from the ladder track, of the tangent point curve $(r_1)$ makes with siding A, with the theoretical result of a short reverse curve, for the track to siding B, in front of the crossing nose. In practice the tendency would be for the track in the lead to be laid straight, resulting in a "kink" at the crossing which would tend to make the wheels strike the crossing nose. This entails excessive wear on the check rail and in time may result in the wheels taking the wrong side of the crossing nose, with consequent derailment. Even when flat similar flexure curves are indicated on the plan, the tendency on the ground is for them to be made straight in the lead. This again results in a kink at the crossing, but the tendency is to throw the wheels clear of the crossing nose, *i.e.*, equivalent to additional "cover."

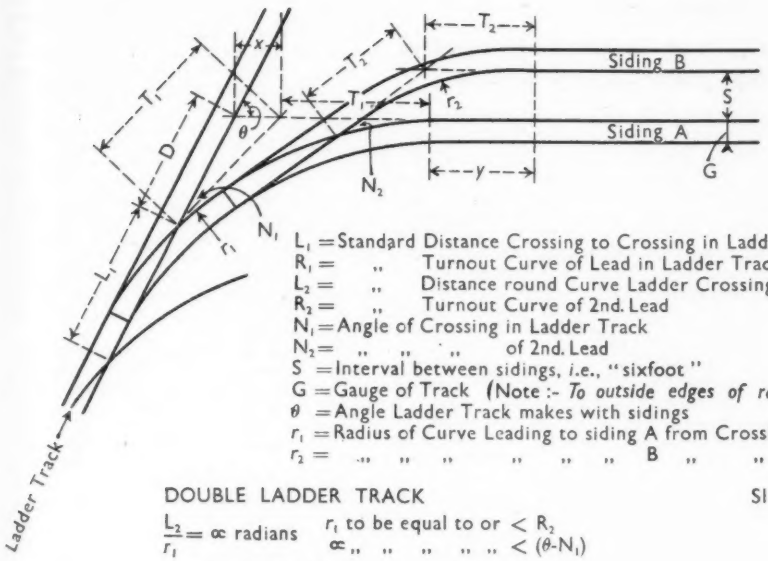
It will be observed that the formulæ are based on figures for the outside edges of the rails. If running edges were worked to, in the author's opinion, there would be unnecessary complicated allowances to be made in the formulæ for the fixed planed portion of the crossings. This therefore is the reason why, when using the formulæ, the calculations should be based on the outside edges of the rails.

The figures in the tables have been calculated for normal gauge with rails having 2¾ in. width of head, *i.e.*, "G" for outside edges equals 5 ft. 2 in.

The author wishes to thank Mr. W. K. Wallace, M.Inst.C.E., Chief Engineer of the London Midland & Scottish Railway, for his permission to publish the tables.

NEW ARGENTINE AIR SERVICE.—A commercial air service operating between Buenos Aires and the Territory of Misiones, the narrow province in the extreme north-east of Argentina, between Brazil and Paraguay, was opened on January 6. Despite its civil character, it is placed directly under the command of the Argentine Air Forces. Three-engined Junkers 52 aircraft are employed on this route.

WAR EMERGENCY STANDARD FOR MOTORS AND GENERATORS.—A war emergency standard for a.c. and d.c. motors and generators (excluding shipborne and airborne machines) has been published by the British Standards Institution. The Specification was prepared by a Government inter-departmental committee, the terms of reference of which were to draft a minimum specification for wartime purposes for d.c. and a.c. generators and motors up to 300 kW (for ground use only), the specification to be designed to give the greatest relief to industry commensurate with user needs. Copies (B.S. 1156-1944) may be obtained from the Publications Department, British Standards Institution, 28, Victoria Street, London, S.W.1, price 1s., post free.




Note: *Calculations to be based on outside edges of rails*

$L_1$ = Standard Distance Crossing to Crossing in Ladder Track
$R_1$ = ,, Turnout Curve of Lead in Ladder Track
$L_2$ = ,, Distance round Curve Ladder Crossing $N_1$ to 2nd. Lead Crossing $N_2$
$R_2$ = ,, Turnout Curve of 2nd. Lead
$N_1$ = Angle of Crossing in Ladder Track
$N_2$ = ,, ,, ,, of 2nd. Lead
S = Interval between sidings, *i.e.*, "sixfoot"
G = Gauge of Track (Note :- *To outside edges of rails*)
$\theta$ = Angle Ladder Track makes with sidings
$r_1$ = Radius of Curve Leading to siding A from Crossing $N_1$
$r_2$ = ,, ,, ,, ,, ,, ,, B ,, ,, $N_2$

## DOUBLE LADDER TRACK

$\frac{L_2}{r_1} = \propto$ radians $r_1$ to be equal to or $< R_2$
$\propto$ ,, ,, ,, ,, ,, $< (\theta - N_1)$

$$\text{Sin } \theta = \frac{2(S+G)}{L_1} \qquad T_1 = r_1 \text{ Tan } \left(\frac{\theta - N_1}{2}\right)$$

$$D = \frac{T_1 \text{ Sin } (\theta - N_1)}{\text{Sin } \theta} \qquad x = \frac{T_1 \text{ Sin } N_1}{\text{Sin } \theta}$$

$$T_2 = \left[S + r_1\{1 - \text{Cos } (\theta - N_1 - \propto)\}\right] \times \text{Cosec } (\theta + N_2 - N_1 - \propto)$$

$$r_2 = T_2 \text{ cotan } \left(\frac{\theta + N_2 - N_1 - \propto}{2}\right)$$

$$y = T_2\{\text{Cos } (\theta + N_2 - N_1 - \propto) + 1\} - r_1 \text{ Sin } (\theta - N_1 - \propto)$$

## SINGLE LADDER TRACK

$$\text{Sin } \theta = \frac{(S+G)}{L_1} \qquad T_1 = r_1 \text{ Tan } \left(\frac{\theta - N_1}{2}\right)$$

$$D = \frac{T_1 \text{ Sin } (\theta - N_1)}{\text{Sin } \theta} \qquad x = \frac{T_1 \text{ Sin } N_1}{\text{Sin } \theta}$$

**Devised by A. Preston**

All Switches—Type "B" (LMSR) DOUBLE LADDER TRACK G=5′ 2″ (*i.e.*, Outside edge of rail)

| S | $N_1$ | $N_2$ | $R_1$ | $r_1$ | $r_2$ | $\theta$ | D | $L_1$ | x | $T_1$ | y | $T_2$ | $L_2$ | $R_2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6′-0″ | 7½ | 8 | 524 | 599 | 771 | 15°-42′-43″ | 21′-11 29/32″ | 82′-5 31/32″ | 20′-9 1/8″ | 42′-4 15/64″ | 95′-11 43/64″ | 48′-2 1/4″ | 84′-6 3/4″ | 613 |
| 6′-0″ | 8 | 8 | 613 | 613 | 709 | 15°-21′-2″ | 23′-7 61/64″ | 84′-4 3/8″ | 20′-7 61/64″ | 43′-11 7/64″ | 88′-9 13/64″ | 46′-3 1/64″ | 84′-4 3/8″ | 613 |
| 7′-0″ | 7½ | 7½ | 524 | 524 | 696 | 17°-9′-38″ | 24′-6 9/32″ | 82′-5 31/32″ | 19′-7 57/64″ | 43′-8 5/16″ | 93′-11 7/32″ | 49′-6 37/32″ | 82′-5 31/32″ | 524 |
| 7′-0″ | 8 | 8 | 613 | 613 | 607 | 16°-45′-51″ | 29′-10 1/64″ | 84′-4 3/8″ | 22′-3″ | 51′-6 29/64″ | 75′-3 33/64″ | 47′-1 55/64″ | 84′-4 3/8″ | 613 |
| 8′-0″ | 7½ | 7½ | 524 | 524 | 593 | 18°-37′-15″ | 30′-1 11/32″ | 82′-5 31/32″ | 20′-11 35/64″ | 50′-5 1/16″ | 80′-10 41/64″ | 49′-9 7/8″ | 82′-5 31/32″ | 524 |
| 8′-0″ | 8 | 9 | 613 | 613 | 659 | 18°-11′-17″ | 36′-3 49/64″ | 84′-4 3/8″ | 23′-7 15/32″ | 59′-2 29/64″ | 75′-0 15/32″ | 54′-2 25/32″ | 85′-4 13/32″ | 613 |
| 8′-6″ | 7½ | 7½ | 524 | 524 | 560 | 19°-21′-20″ | 33′-0 3/64″ | 82′-5 31/32″ | 21′-6 31/32″ | 53′-9 51/64″ | 75′-8 1/32″ | 50′-7 19/32″ | 82′-5 31/32″ | 524 |
| 8′-6″ | 8 | 9 | 613 | 613 | 630 | 18°-54′-16″ | 39′-7 29/32″ | 84′-4 3/8″ | 24′-2 15/16″ | 63′-1 1/32″ | 70′-6 27/64″ | 55′-10 7/16″ | 85′-4 13/32″ | 613 |
| 9′-0″ | 7½ | 7½ | 524 | 524 | 534 | 20°-5′-37″ | 35′-11 15/32″ | 82′-5 31/32″ | 22′-1 11/32″ | 57′-2 47/64″ | 71′-1 1/8″ | 51′-9 7/16″ | 82′-5 31/32″ | 524 |
| 9′-0″ | 8 | 9 | 613 | 613 | 609 | 19°-37′-26″ | 43′-0 13/16″ | 84′-4 3/8″ | 24′-9 63/64″ | 66′-11 47/64″ | 66′-6 7/8″ | 57′-9 11/16″ | 85′-4 13/32″ | 613 |
| 10′-0″ | 7½ | 8 | 524 | 524 | 551 | 21°-34′-49″ | 42′-0 25/64″ | 82′-5 31/32″ | 23′-1 1/16″ | 64′-1 13/32″ | 70′-3 31/32″ | 57′-3 3/32″ | 84′-6 3/4″ | 613 |
| 10′-0″ | 8 | 10 | 613 | 613 | 653 | 21°-4′-21″ | 50′-0 13/16″ | 84′-4 3/8″ | 25′-10 63/64″ | 74′-10″ | 68′-6 59/64″ | 65′-9 3/16″ | 87′-2 1/4″ | 613 |

All Switches—Type "B" (LMSR) SINGLE LADDER TRACK G=5′ 2″ (*i.e.*, Outside edge of rail)

| S | $N_1$ | | $R_1$ | $r_1$ | | $\theta$ | D | $L_1$ | x | $T_1$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6′-0″ | 7½ | | 524 | 528 | | 7°-46′-54″ | 0′-0 11/64″ | 82′-5 31/32″ | 0′-8 11/32″ | 0′-8 33/64″ | | | | |
| 6′-0″ | 8 | | 613 | 613 | | 7°-36′-22″ | 0′-1 3/4″ | 84′-4 3/8″ | 2′-3 3/8″ | 2′-5 7/64″ | | | | |
| 7′-0″ | 7½ | | 524 | 528 | | 8°-29′-1″ | 0′-4 51/64″ | 82′-5 31/32″ | 3′-6 9/16″ | 3′-11 5/16″ | | | | |
| 7′-0″ | 8 | | 613 | 613 | | 8°-17′-31″ | 0′-10 5/64″ | 84′-4 3/8″ | 5′-3 5/32″ | 6′-1 5/32″ | | | | |
| 8′-0″ | 7½ | | 524 | 528 | | 9°-11′-12″ | 1′-2 11/16″ | 82′-5 31/32″ | 5′-11 43/64″ | 7′-2 13/64″ | | | | |
| 8′-0″ | 8 | | 613 | 613 | | 8°-58′-44″ | 1′-11 15/16″ | 84′-4 3/8″ | 7′-9 17/32″ | 9′-9 1/4″ | | | | |
| 8′-6″ | 7½ | | 524 | 528 | | 9°-32′-19″ | 1′-9 1/4″ | 82′-5 31/32″ | 7′-0 5/8″ | 8′-9 31/32″ | | | | |
| 8′-6″ | 8 | | 613 | 613 | | 9°-19′-22″ | 2′-8 27/64″ | 84′-4 3/8″ | 8′-11 3/32″ | 11′-7 21/64″ | | | | |
| 9′-0″ | 7½ | | 524 | 528 | | 9°-53′-28″ | 2′-4 25/32″ | 82′-5 31/32″ | 8′-0 23/32″ | 10′-5 11/64″ | | | | |
| 9′-0″ | 8 | | 613 | 613 | | 9°-40′-1″ | 3′-6 11/64″ | 84′-4 3/8″ | 9′-11 23/32″ | 13′-5 7/16″ | | | | |
| 10′-0″ | 7½ | | 524 | 528 | | 10°-35′-50″ | 3′-10 17/64″ | 82′-5 31/32″ | 9′-10 35/64″ | 13′-8 7/32″ | | | | |
| 10′-0″ | 8 | | 613 | 613 | | 10°-21′-24″ | 5′-3 31/32″ | 84′-4 3/8″ | 11′-10 31/64″ | 17′-1 33/32″ | | | | |

# Cargo Coaling Plants—IV*

## *A detailed survey of the principles and installations involved in loading coal on board ship from railway wagons*

*By J. Dalziel, formerly Assistant Electrical Engineer, L.M.S.R.*

WHERE an anti-breaker is not fitted it is customary, as already mentioned, to fit a final delivery chute; this should preferably be rotatable and have a throw of up to 12 ft. so that it can vary the point of delivery of the coal over a wide area, especially if used in conjunction with slewing and telescoping of the boom. Such a chute can, if desired, deliver under the hatch coamings and also into bunker hatches or manholes difficult of access. In general, it should be unnecessary with conveyors to swing the ship for completion of loading, or bunkering. As far as possible the entry of the coal into this chute should be effected without fall but this is difficult to arrange round the whole circle of rotation. A useful expedient is to provide a ledge as far as possible all round, on which coal can lodge so as to form a cushion.

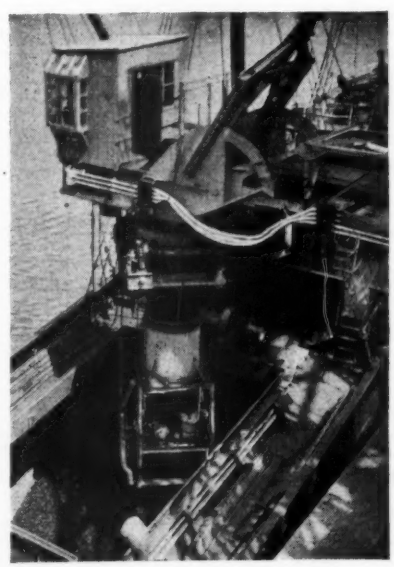
Except where plant deals exclusively with fines and bunkers, it is desirable to fit an anti-breaker though this adds considerably to the expense. The Handcock anti-breaker has already been mentioned in connection with hydraulic hoists and this anti-breaker can be used with conveyors. It necessitates the provision of a crane, generally of some 15 tons capacity, together with an attachment for the anti-breaker to the end of the boom. Provision must be made so that the boom and the anti-breaker can be slewed, or otherwise moved in synchronism with each other, and there is certainly some restriction on the free movement of the boom. The writer prefers to drive the Handcock shelves by motor at a definite speed instead of relying on gravity, which gives a varying speed according to the number of shelves in use, except when under the control of an automatic centrifugal brake. The Handcock as applied to conveyors works very much as when applied to hoists. A distributor, however, is sometimes fitted to the bottom of the Handcock and this takes the coal delivered from the shelves and distributes it by a horizontal belt over a radius of about 10 ft. Provision for delivering at various depths is made as with hoists by the Handcock being lifted by the crane so that the shelves in use vary accordingly.

The Mitchell anti-breaker was evolved for use with conveyors and consists of a telescopic tube, of a diameter suitable for the size of the coal to be dealt with, terminating in a distributor with a horizontal belt separately motor driven. Provision for varying heights of delivery is made by telescoping the tube. This is closed to its minimum depth when coal shipment begins; it is filled to within a foot of the plate that takes coal off the boom belt; it is then extended with the coal continuing to flow into it until the distributor reaches its bottom position in the hold for delivering the coal with minimum drop. In the top of the tube is a flat plate, hung so that when the coal reaches the pre-arranged height it is displaced so as to actuate a switch; this starts the distributor motor so that coal is drawn from the tube. As the level of coal is lowered, the flat plate swings back and actuates the switch to stop the distributor motor; then the coal level rises again, and the cycle is repeated. The distributor can be rotated through 360° and can be used for trimming and, if necessary, for bunkering, but the whole anti-breaker can be detached to reach high-placed bunker hatches and can be replaced by a plain chute. This applies also to the Handcock. In the writer's experience the Mitchell anti-breaker, including its automatic features, works very well. The distributor could be driven by a variable-speed motor or variable-speed gear as an alternative to the stop and start arrangement described and actually used. Control would then be rather more complicated but would not present any very great difficulties; it would offer the advantage of keeping the coal at a more constant level in the tube. The Mitchell anti-breaker has been applied successfully to coal hoists.

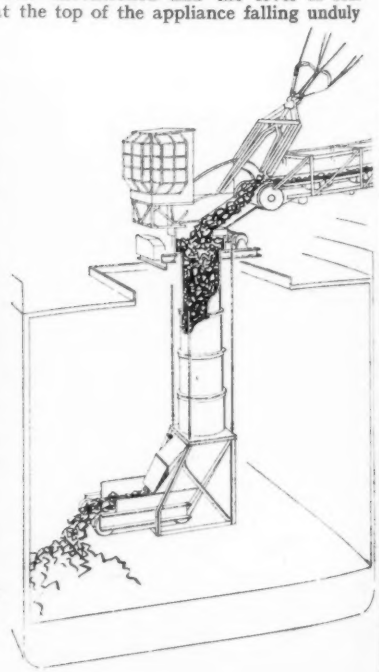
Other tube-type anti-breakers are one by the Linatex Company and the Morison-Leonard device of the Birtley Co. Ltd. which is telescopic. The former consists of a tube in a series of sections; these sections are divided from each other by stiffened slotted-rubber diaphragms. Coal is fed by its own weight through these diaphragms and is cushioned by the rubber in passing from one to the other; it is at the same time prevented from falling too freely. The appliance could be fitted with a distributor, but this has not been done so far as the writer is aware. It has the disadvantage that it cannot be telescoped. When it requires lengthening or shortening, sections with diaphragms can be added or removed fairly quickly but this does not give quite the same adaptability. The writer has no actual knowledge of the results given by this appliance.

The Birtley Morison-Leonard anti-breaker consists of a series of telescoping tube sections of such number as is indicated by the depth of the holds to be loaded. The bottom section terminates in a skirt having a series of tines round the circumference of a ring which can be raised and lowered up and down the tube; the tines are approximately 2 ft. long. When coaling commences the tube is lowered on to the bottom of the hold and filled from the coaling chute or whatever appliance the anti-breaker is fitted to; thereafter it is kept full. The idea is to build up a column of coal solid throughout from the bottom of the anti-breaker up the feeding chutes to the hopper or other receptacle into which the wagons are emptied.

The coal is admitted from the anti-breaker into the hold by the lifting of the tined skirt and, as the height of the loaded heap of coal grows, by the telescoping of the anti-breaker. The anti-breaker itself is suspended by crane at the mouth of the coaling chute. Telescoping is effected by a winch through three ropes each working on to an independent barrel; the tined skirt is raised and lowered by two ropes on separate drums which are clutched and declutched as required on to a continuously running motor. Each is fitted with a brake. The action is to allow the coal to flow out by raising the skirt slowly but being ready to lower it sharply with the clutch out and the brake off to check immediately any tendency towards free flow or flow becoming too fast. Clutching and declutching is manually operated, but the writer considers it possible to make the whole action automatic, governed by the level of the coal at the top of the anti-breaker in the same way as in the Mitchell appliance. It is neither possible to fit a distributor to this anti-breaker nor to move it in the hold without disturbing the column of coal, but under suitable conditions the writer would expect it to give very satisfactory results as to anti-breakage. There is, however, a possibility of the outflow becoming somewhat uncontrolled and the level of coal at the top of the appliance falling unduly

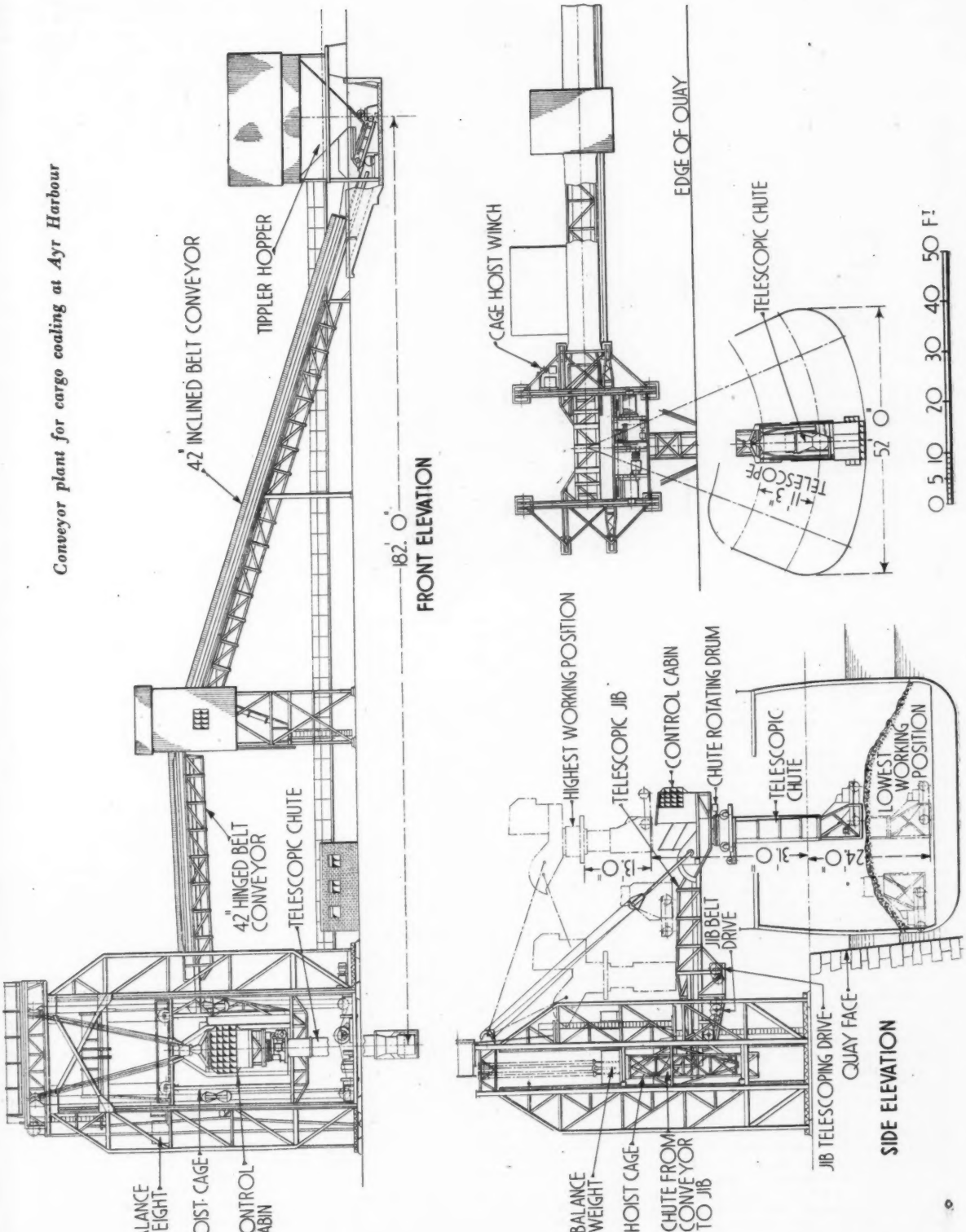


*Mitchell anti-breakage device as used at Ayr Harbour*



* Previous parts appeared in our issues of January 7, February 4, and March 3

*Conveyor plant for cargo coaling at Ayr Harbour*



*Boom and anti-breaker of conveyor-type coaling plant at Ayr*

when it is necessary to release an extra large piece of coal.

An appliance working on a similar principle, but using a larger diameter tube not fitted with a skirt, is understood to have been in use at Gdynia and was tried some time ago at a North-East coal port. In this case the tube was raised by crane for the release of the coal; the principle was the same as in the other appliances, namely, to provide for a controlled flow from the bottom of a column of coal instead of a free fall.

The writer was associated with tests of two entirely experimental forms of anti-breaker in which the principal feature was the descent of the coal between two downward moving rubber belts held close to each other by spring-controlled rollers. In one of these appliances the rollers were rigid cylinders; the springs acted on them through bell crank levers at each end. The belts thus tended to open right across and spill at the sides when passing a large piece of coal, and this spilling was aggravated by the rollers being disposed so that the belts were zigzagged in their descent. The conditions of the tests of this appliance were perhaps not quite fair to it, as its belts were much narrower than those of the plant with which it was tested. In the other and more successful of the two appliances the downward travelling rubber belts were restrained normally to within a few inches apart from each other by round spiral springs behind them; these springs rotated and were mounted so that they gave locally, but not right across, to allow large pieces of coal to pass down while preventing them from falling free. The drawback of this arrangement as originally fitted was that smaller pieces were allowed more or less a free fall according to the number of large pieces passing down and holding the belts apart. A great improvement was effected by fitting rubber shelves cemented on to one of the belts at right angles to its face and by spacing the belts out accordingly. In an early form the construction of this apparatus was crude mechanically; also it was difficult to mount and hold, as it was very light and presented little resistance to displacement by wind pressure, but the tests made were very promising. Development of the appliance was not persevered with, however, to the writer's regret.

### Tests and Breakage Percentages

The writer was associated with a number of shipment tests made by conveyors both with and without special anti-breakers of the types above mentioned, also with shipments made by crane for comparative purposes. He has no record of any tests made with either a hoist or a conveyor fitted with a Handcock appliance but it is understood that various shippers prefer the conveyor so equipped to other types of plant equally available; approval has been expressed from time to time of the high quality of cargo shipped by it. Tests on shipments are made by ascertaining the quantity of small through a ½ in. or 1 in. mesh screen in the wagons before tipping and subsequently when the cargo is unloaded from the ship. According to the writer's experience shipments loaded by conveyor through a chute without anti-breaker into an open-hold lighter contain on the average some 2 to 4 per cent. more small than shipments by crane.* This is the most favourable condition for crane loading as the wagon can be lowered right down to the coal already loaded without loss of time, whereas it is not equally possible to do so in loading through the hatches of larger ships.

Using a Mitchell anti-breaker the dross made varied considerably with the kind of coal shipped; it was, of course, much greater with soft coal, amounting to 15 or 16 per cent. The same applies to crane shipments and on the basis of numerous tests it can be said the breakage is practically the same with the same quality of coal with crane as with conveyor shipment. Measured as dross through 1 in. mesh breakage is from 7 per cent. with hard to 16 per cent. or more with soft coal. The experimental rubber-shelf anti-breaker previously described, when not fully adjusted, shipped a cargo of medium soft coal with a production of dross through 1 in. mesh of very little over 7 per cent.; later, when it was better adjusted, it shipped a cargo of very soft coal making a dross percentage in shipment of only 7¾ per cent. These results are practically the same as those obtained in carrying out a number of crane shipments of a harder coal with the wagons lowered down to the coal in the hold.

Conveyor shipment tests have been made using hand-picked wagon loads containing no dross at all. As tipping then took place into an empty hopper as well as into an empty anti-breaker (when one was fitted) conditions were such as to make the breakage a maximum. When loading over a Mitchell anti-breaker plant the dross made in these conditions was 8½ per cent.; practically the same percentage was recorded on a plant without an anti-breaker; the coal was medium hard in both tests.

It is not always the actual dross content of cargoes that affects personal estimates of their quality; their first appearance when the hatches are opened up affects judgment considerably. The conveyor is at a disadvantage in that the last few minutes' operation of the belts is concerned chiefly with running off accumulated dust, and this dust, deposited on the top of the shipment, gives a bad impression. Crane loading on the contrary tends to sift out small stuff, leaving the larger coal on the top, thus giving a favourable impression of the cargo as a whole.

*(To be continued)*

* Total breakage about 7 to 10 per cent.

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BRITISH THOMSON-HOUSTON CO. LTD.—Mr. H. N. Sporborg, the Chairman, in the course of his address at the 49th ordinary general meeting, said that the company's manufacturing plants had been maintained in as high a state of efficiency as possible under existing conditions. It had maintained to the utmost, in these difficult times, its considerable activities in the education and training of young engineers—a matter to which the directors had always attached the greatest importance. The research staff and laboratories had been augmented, and the extensive arrangements for the training of operators who were newcomers to the industry had been maintained. The board would like to express to the authorities concerned satisfaction at their permission to refer through the technical press to the company's work with Group Captain Whittle and the Power Jets Company in the development of the Jet engine. The board was fully alive to the need for concerting plans well in advance for the change-over to peace conditions. He would like to pay a well-deserved tribute to the splendid service rendered by the regular employees, and to add a particular word of appreciation to the many temporary workers who were contributing their services to the war effort.

# The Transport Problem in Plain Terms

## *Some proposals for post-war action*

*(By a Veteran Railway Correspondent)*

THERE has been a tendency of late to intrude abstract theories and vague generalities into the discussion of transport questions. We hear a good deal of talk about setting up the best possible transport system to embrace rail, road, water, and air services. Who can draw up a perfect plan for a field of activity where the total volume of work to be done is apt to fluctuate violently and where the transport agencies themselves are often affected by new devices and inventions, shortage of essential fuel and materials, price movements and other incalculable factors? Again we are told that transport is to be provided at "the lowest economic cost" or at "the least real cost to the whole community." By what statistical feat are these costs going to be found?

An idea is prevalent in some quarters that certain abstract principles can be settled first of all and that the development of each form of transport can then be guided so as to fit with them. In this matter-of-fact country of ours things are not done in that way. Our existing transport structure has grown up in a rough and ready fashion over a long term of years. Adjustments, often of first rate importance, have been made from time to time to meet changing conditions. Instead of aiming at theoretically perfect arrangements, we have been content as a rule with a large measure of compromise between all the parties concerned, subject to the protection of the public interests. We shall be wise to proceed on this well beaten track and to put metaphysical speculation aside.

### Future of the Railways

For the second time in a quarter of a century the future of the railways is the crux of the situation. The war has shown conclusively that they remain the backbone of our transport system and should be maintained in full efficiency. When peace comes, the Government will have controlled the lines for a long term, working them at full stretch, restricting materials and equipment for their use and advancing the wages of the staff, but not increasing charges sufficiently to offset rising costs of working. On the other hand, the Government has authorised the construction of many new works for handling wartime traffic and a large number of these facilities should be retained as permanent betterments even if a substantial addition to the companies' capital expenditure is involved. There will have to be a great clearing up between the Government and the railways at the end of this war just as there was after the first world war when a somewhat similar state of affairs existed. In 1921 a heroic remedy was applied by the passing of the Railways Act which grouped the railways in order to effect economy and granted them a reasonable standard revenue. Some savings accrued but the amalgamated companies always have been short of their standard earnings and since 1938 have been pressing for the repeal of the statutory regulation of their charges so that they can compete on equal terms with road transport. It will not, however, be enough to cancel the sections of the Railways Act which restrict charges. Constructive legislation will have to be passed to stabilise the relations between rail and road transport so that they can develop side by side and provide the public with organised reliable services. The grouping of 1923 in a large measure converted the railway companies into public utilities with limited revenues and definite responsibilities to the nation. It was never more than a temporary expedient to prepare the ground for complete unification. In the strenuous times that lie ahead there should be one railway system and a single railway board to settle policy for the country as a whole. It need not be a large body, but its members should be men of wide business experience, approved by the Government as well as by the stockholders. The Chairman, Deputy Chairman, and possibly one or two other members of the board should be required to devote their whole time to its affairs. The actual management of the lines would be carried on by the existing railway officers who would be subject to the control of the board and would work on a regional basis —not necessarily identical with the territories now served by the main-line companies.

There should be no more difficulty in settling the finance of unification than arose in fixing the terms of amalgamation schemes in 1923. Appreciable working economies should result from the changeover. The number of secretarial, legal, technical and publicity officers should be considerably reduced. Joint lines, with all the costly apparatus for keeping separate accounts, would disappear. As railways would cease to compete with one another, pooling, with another great volume of accounting, would vanish. The Railway Clearing House could be wound up and the bulk of its large staff would become spare. Substantial savings should also flow from the adoption of common standards and uniform methods.

The outstanding advantage would be that for the first time in the history of railways there would be a national policy for dealing with fundamental questions like the electrification of main lines. The high price of locomotive coal and the decline in output of the best qualities strengthen the case for electrifying the whole of the lines in many districts yielding a heavy passenger and freight traffic. The future prosperity of our railways may depend on bold and far-flung schemes for superseding the steam locomotive except on lines carrying a sparse traffic. With one small exception all our experiments during the past 40 years have been confined to the conversion of suburban passenger lines—even the Southern Railway's excellent Portsmouth service is largely of an outer-suburban character. The project for electrifying the Manchester and Sheffield section of the L.N.E.R. no doubt will be resumed with vigour after the war, but it should become part of a scheme sufficiently comprehensive to test the advantages of electrifying main routes in a thorough-going manner. This question is so far-reaching that it cannot be left to the discretion of individual companies. The public are entitled to expect a common standard of enterprise to be shown throughout the whole railway system. Once the lines come under a unified control, there will be an awakening all round with keen rivalry between administrative regions. The feeling that railways have seen their best days has been far too prevalent: let it be replaced by a spirit of confidence and adventure.

### Passenger Road Services

The introduction of the licensing system in 1930 soon led to the organisation of passenger road undertakings on a regional basis so that it is a simple matter for the Traffic Commissioners to take stock of their operations. The fact that the railway companies have substantial holdings in many of the amalgamated bus concerns has curbed indiscriminate competition without impairing efficiency and has helped to give stability to the division of passenger carryings between rail and road. The large bus companies give more dependable public services than a multitude of small bus proprietors could ever have supplied, but it is notorious that in some cases they are making excessive profits. Their licences confer a traffic monopoly on them and they use the streets and highways as their place of business. There is no reason why they should not be called on to pay a fee for these privileges in proportion to the richness of the district served. As the principle of standard revenue has been applied to the railway companies, which bear the cost of all the facilities used by the public, it would be equitable to restrict the profits of the holders of bus licences to a reasonable percentage on their capital plus a share of the excess profits calculated on a basis which would not discourage the licensees from showing initiative and enterprise. Incidentally, the institution of a system of regulating profits would mean that accounts and returns, in prescribed form, would have to be lodged by the bus companies with the Ministry of Transport and adequate statistics of road passenger business would be on record.

### Road Freight Haulage Industry

Until the Road & Rail Traffic Act of 1933 imposed a licensing system for goods vehicles, anybody could start business as a freight haulier and to this day the industry lacks coherence and organisation. A few firms operate large fleets of vehicles efficiently, but there is a multitude of small owners with two or three vehicles who are free to pick and choose traffic in competition with other carriers. They are not obliged either to supply a regular service or to carry for everybody in a particular district: they can run anywhere and make any charges they please. There can be no stability about our inland transport until these chaotic conditions are ended. The freight haulage industry should be organised on a regional basis, and the Traffic Commissioners left with discretion to allow such long-distance services as are desirable in the public interests. Simultaneously, road haulage charges should be brought under statutory regulation and be subject to periodical review in the same way as railway charges. To preserve both the rail and road rates structures, private carriers (or "C" licences) should be restricted to the number of vehicles which traders require for the conveyance of their own goods within a reasonable radius of their works.

These may sound strong measures, but they would leave the public free to choose between dependable road services and rail or water transport. It should not be

overlooked that the issue of licences to a haulier is equivalent to presenting him with the goodwill of a business undertaking or even in some cases to conferring a monopoly upon him. It is therefore justifiable to attach stringent conditions to the licences, and the principle of standard earnings should apply to road haulage firms, each of whom should furnish detailed accounts and returns to the Ministry of Transport.

### Water Transport and Docks

There is no crying need to interfere with the ordinary development of coastwise carriers who have always managed to establish some sort of understanding with the railway companies and have shared with them traffic between competitive points in fairly definite proportions. Canals now perform such a small part of the movement of freight tonnage that they can safely be left on one side. Neither does the railway ownership of docks affect the general transport problem materially. Local conditions at every port differ so widely that it seems impracticable to lay down any general rule about setting up an independent Port Authority to take over railway-owned docks at a valuation. The advisability of making a change of this kind would have to be examined separately for each dock or group of docks and in many cases an impartial inquiry would almost certainly fail to find adequate reasons for upsetting the existing arrangements.

### Conclusions

Air services have been left out of account because civil aviation is very much a matter of the future and is likely to concern overseas transits more than internal communications. The paragraphs above state in plain terms the problem of the relations between the older transport agencies which will have to be solved as soon as hostilities cease. The questions involved are not so complicated that they cannot be settled without taking refuge in state ownership or establishing a National Transport Board as advocated by several planners of a reconstructed post-war world. The suggestions thrown out in the course of this article do not involve any general upheaval of existing institutions. Based on precedents and existing practices, they would regulate rail and road operations in an equal degree. In their turn road passenger and freight haulage companies would become in effect public utilities with a higher status than they now hold, while plenty of scope would be left to all forms of transport to develop their activities for the public benefit.

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## Welding Track Work on the L.M.S.R.

### *Methods used for maintenance of running lines and crossings*

"ON the spot" welding is playing an important part in the construction and maintenance of L.M.S.R. track, and expansion has been rapid during the last four years. The number of welders has been doubled since the war began, and one of the outcomes of the development has been a conservation of materials and a saving in labour, tools and metal.

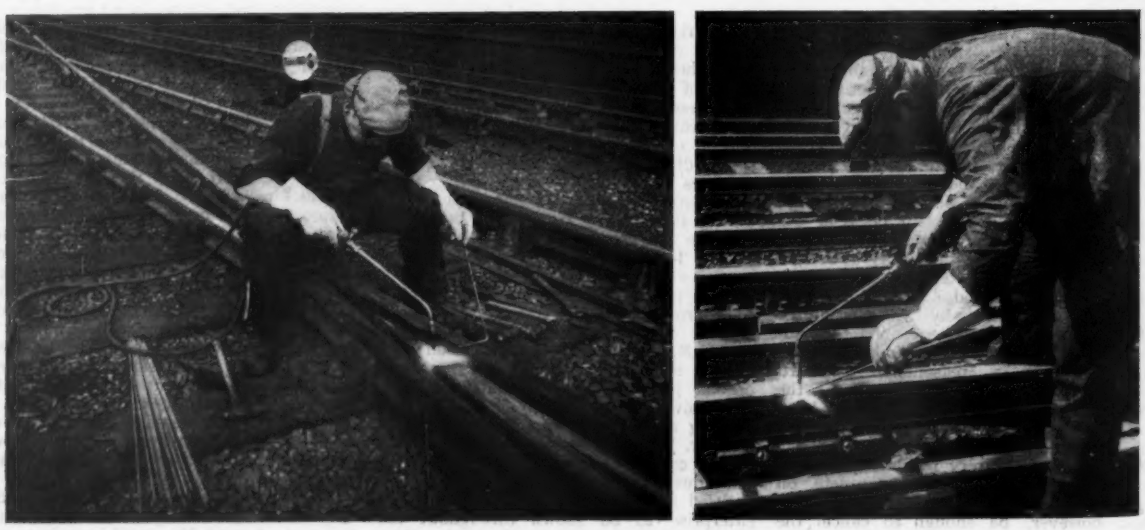
Another important result has been the elimination of interferences and delays to war traffics caused by track relaying for, instead of a number of platelayers removing worn points and crossings and replacing with new, these worn rails are welded and re-surfaced by one welder while the rail is in its original position, in the intervals between the passage of trains. The L.M.S.R. uses the electric arc, and oxy-acetylene welding processes, and as trackwork welding is mainly carried out *in situ* the plant must be readily transportable from site to site.

The welding staff was selected from the platelaying staff and comprises over 80 oxy-acetylene and electric arc welders and 20 grinders attached to the latter class of welders. This staff is spread out over the whole length of the L.M.S.R. and for administrative purposes is controlled by the District Engineers. The training of welders, their supervision and detailing of welding procedure is governed by a Chief Engineer's Assistant; a head office Welding Inspector and an Assistant Inspector maintain a constant supervision of the welders and the work carried out.

The number of welders allocated to each District Engineer depends on the mileage of track under his control and the density of traffic. Of the total number of welders, two are engaged in reconditioning switches and crossings in a Reclamation Depot. These welders deal with units which have become very badly worn.

Although the quality and tensile strength of rail steels are undergoing improvement, the losses caused by wear are still very high, particularly in the case of switch and crossing rails. Neglect to maintain continuity of rail surface in good condition is very soon reflected not only in intensified rail wear, but is accompanied by greater wear of other switch and crossing components, such as chairs, bolts and blocks. It is, however, essential that wherever intense wear is taking place, the renewal of worn parts is more frequent and must always be accompanied by high costs in replacement and interruption and divergence of traffic where it is least wanted by the Operating Department. As the life of the switch and crossing units is lower than that of the other junction components, the reconditioning of any worn units so that their ultimate life synchronises with that of the other components and complete renewal of the junction work then carried out, obviously results in the greatest economy. The advent of welding enabled this reconditioning to be carried out *in situ* and crossings are re-surfaced many times during their life in a junction, in some cases nine times.

Before welding of any switch or crossing unit commences, the rails must be examined for flaws, fractured components replaced, bolts, keys and chair fastenings tightened up and timbers packed. All surfaces to be welded should be cleaned and metal excrescences, due to flow arising from the hammer action of passing wheels, must be ground or cut off. To resurface rails without putting the units in good order beforehand invites failure of welded components.



*Two examples of maintenance track welding in progress on the L.M.S.R.*

# Modifications to Indian Shunting Locomotives

## *Heavy units of the North Western Railway (India) have been converted from the 0-8-0 to the 2-8-2 wheel arrangement to overcome a track-spreading tendency*

THREE 0-8-0 tender engines of the "XG" type, built to the design of the North Western Railway (India) by Beyer Peacock & Co. Ltd. in 1928, were eventually found to have a tendency to spread the track. This was attributed to a short rigid wheel base in conjunction with an unusually long overhang at each end. This overhang was 11 ft. 3 in. at the front end and 11 ft. 4 in. under the cab. The decision was therefore taken to convert these locomotives to the 2-8-2 type. Particulars of these engines before conversion are given in the table below and also in the diagram.

| | |
|---|---|
| Cylinders, dia. ... ... ... ... | 23½ in. |
| ,, stroke ... ... ... | 28 ,, |
| Coupled wheels, dia. ... ... ... | 4 ft. 3 in. |
| Evaporative heating surface, tubes ... | 2,267 sq. ft. |
| ,, ,, ,, firebox | 186 ,, |
| ,, ,, ,, total ... | 2,453 ,, |
| Superheating surface ... ... ... | 605 ,, |
| Combined total ... ... | 3,058 ,, |
| Firegrate area ... ... ... ... | 41·5 ,, |
| Boiler pressure, per sq. in. ... ... | 180 lb. |
| Tractive effort (at 85 per cent. boiler pressure) ... ... ... ... | 46,389 lb. |
| Adhesion weight ... ... ... | 91¼ tons |
| Adhesion coefficient ... ... ... | 4·4 |
| Weight of engine in working order ... | 91¼ tons |
| Water capacity of tender ... ... | 4,500 gal. |
| Coal ,, ,, ... ... | 8 tons |
| Weight of tender, full ... ... ... | 63 tons |
| Total weight of engine and tender ... | 154¼ tons |

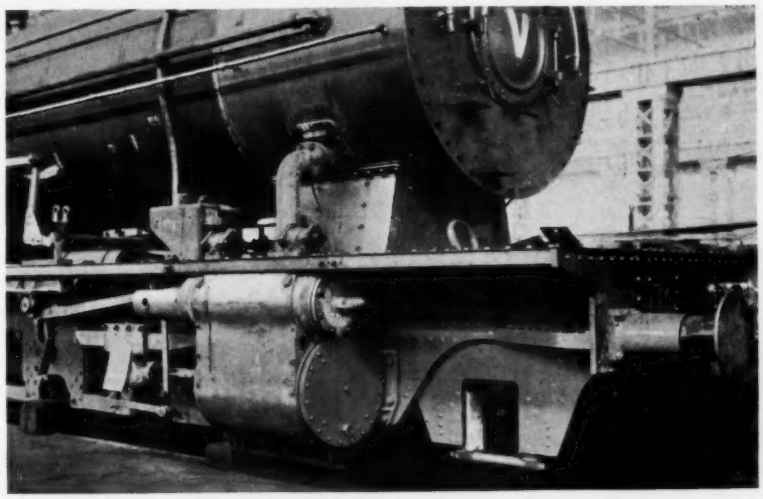
Through the courtesy of Mr. H. Hinton Cooper, Chief Mechanical Engineer, North Western Railway, our correspondent was given facilities to inspect and photograph these engines, and he was given the necessary particulars from which this description was compiled.

In the engines as originally built, the front buffer beam was 9 ft. 2 in. from the centre of the leading coupled wheels. In the modified engines the front end has been extended 3 ft. by the addition of plates 1⅛ in. thick riveted inside the original frames; these make provision for the radial carrying wheels at the front. Cannon-type axle boxes similar to those used in the standard "HG/S" 2-8-0 engines of the same railway are fitted. The additional wheels, leading and trailing, are of 3 ft. dia., and are similar to the bogie wheels on the standard "XC" Pacific locomotives.

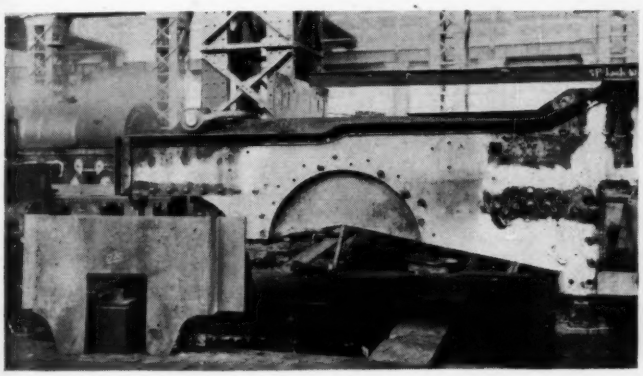
The overhang at the back of the engine was adequate for the accommodation of the hind carrying wheels, but part of the frame plates was cut away and strengthening pieces were fitted across the cuts; also auxiliary frames were riveted in place to meet requirements. The hind carrying wheels follow the Cartazzi principle and have lateral play of 3½ in. All new journals are of standard size, namely, 10 in. by 5½ in.

Because of the reduction of weight on the coupled wheels, leading to a corresponding reduction of the adhesion coefficient, the boiler pressure had to be reduced from 180 to 160 lb. per sq. in. to prevent wheel slip. The resulting tractive effort at 85 per cent. boiler pressure is 38,658 lb. compared with a previous figure of 46,389 lb. The new weight distribution is shown in the second of the accompanying diagrams. It corresponds to an adhesion coefficient of 4·11.

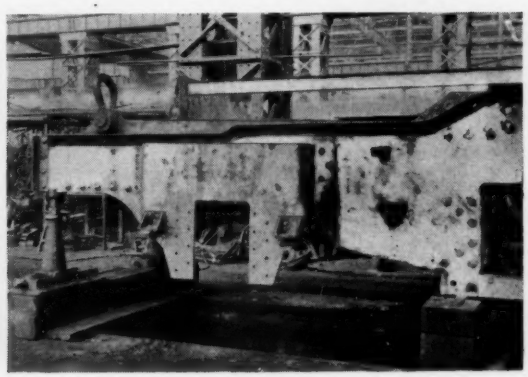
The modifications were carried out to designs prepared by the Central Standards Office of the Railway Board of the Government of India in collaboration with the Chief Mechanical Engineer, N.W.R.; the necessary work was carried out in the locomotive workshops of the railway. Originally the locomotives were numbered 911, 912, and 913; they have been reclassified "XG/M" type and renumbered 971, 972, and 973. As can be seen from the illustration at the head of this article the modifications, which were completed at the end of 1942, have greatly improved the appearance of these locomotives; furthermore the reduction in the maximum axle load has not affected their capacity to deal in the hump yard with loads for which they were originally built. At present the engines are employed in the busy interchange hump yard near Saharanpur, where, according to the latest reports, they are giving a very good account of themselves. (*See also illustrations on page* 394).



*Extended leading end ready to receive radial wheels*

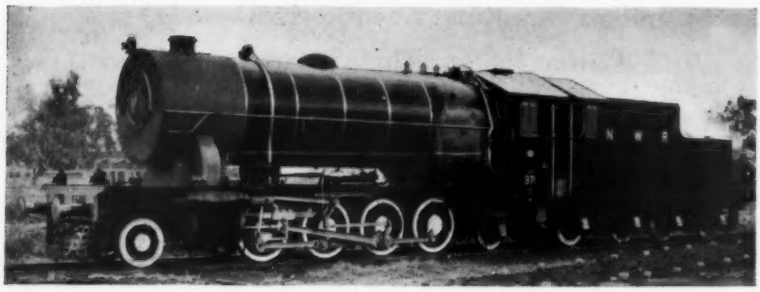


*Back end of frame. Plate cut away and strengthened auxiliary frame ready to be fitted*



*Back end of frame modified and housing for hind carrying wheels fitted*

TWO-FOOT GAUGE IN THE U.S.A.—According to the January issue of our American contemporary, the *Railroad Magazine*, the six-mile Monson Railroad, which was abandoned last year, was the last public railway of 2-ft. gauge in the U.S.A. Slate had been almost the sole source of revenue for the line, but in recent months the Monson Slate Company (which owned the railway) has been hauling its freight by motor lorry. The two previous 2-ft. gauge lines in America to be abandoned were the Bridgton & Harrison Railroad and the Sandy River Line.



2-8-2 "XG/M" type locomotive, No. 971, as rebuilt, North Western Railway, India

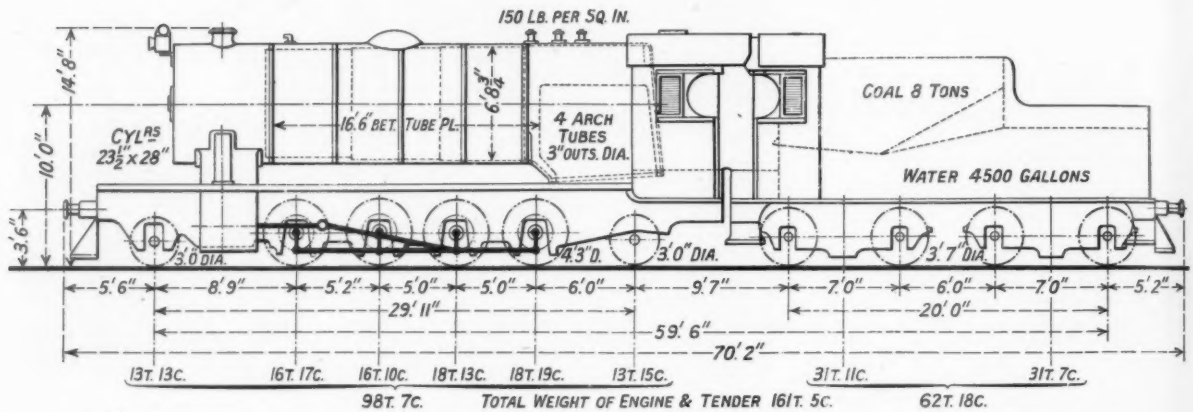
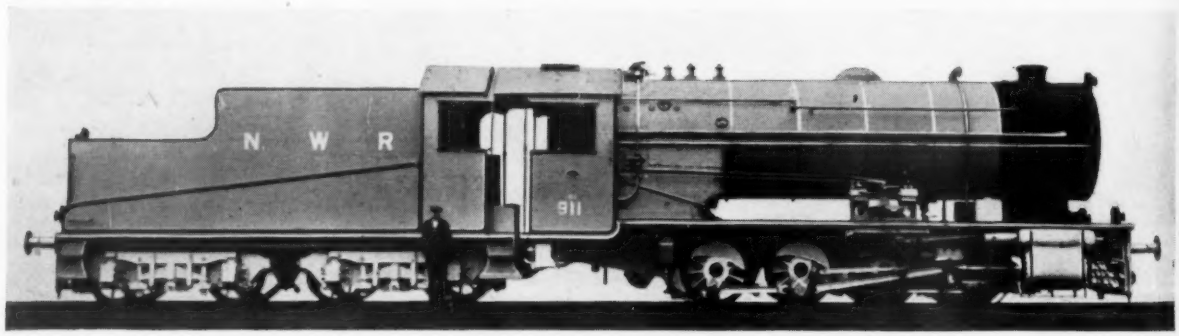



Diagram showing principal dimensions and weights of 2-8-2 "XG/M" type locomotive, No. 971, as rebuilt




"XG" type locomotive No. 911, as originally built, North Western Railway, India

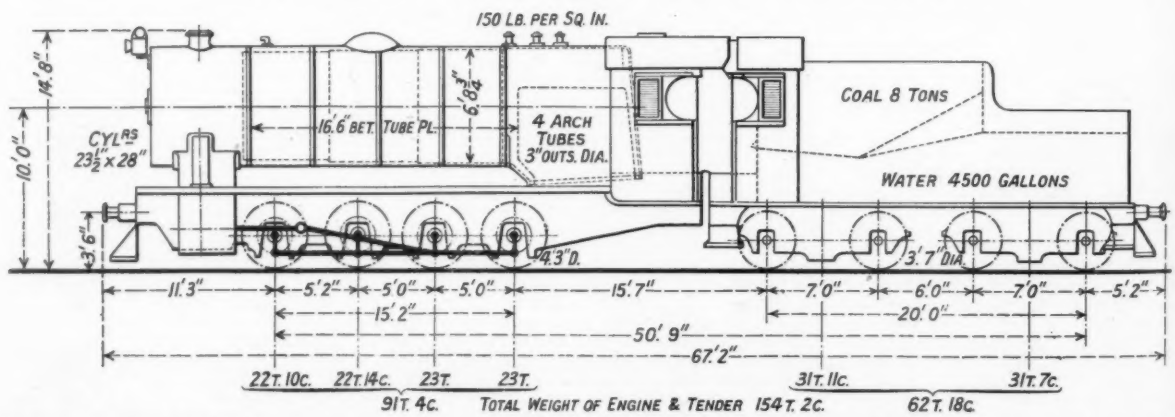


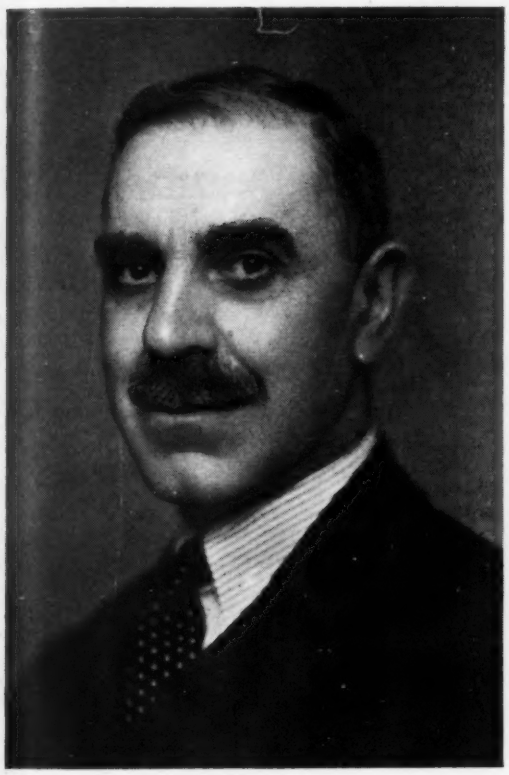

Diagram showing principal dimensions and weights of "XG" type locomotive, No. 911, as originally built (See article, page 393)

# RAILWAY NEWS SECTION

## PERSONAL

Sir William Arthur Stanier, F.R.S., M.I.Mech.E., M.I.Loco.E., as recorded in our last week's issue, has retired from the position of Chief Mechanical Engineer, London Midland & Scottish Railway, but has been retained by the company in the capacity of Consultant. Sir William Stanier has been, since September, 1942, on the staff of the Minister of Production, as a Scientific Adviser to H.M. Government. He is the son of the late Mr. W. H. Stanier, Chief Stores Superintendent, Great Western Railway, and was born in 1876. He was educated at Wycliffe College, Stonehouse, and entered the Swindon Works of the G.W.R. as an apprentice in 1892. After serving his apprenticeship he became a draughtsman, and, in 1900, was appointed Inspector of Materials; in the next year he was transferred to the Running Department as Technical Inspector at Swindon Running Shed. In 1903 he was promoted to be Assistant Divisional Superintendent, Swindon, and a year later he was transferred to Paddington in a similar capacity. In 1906 he returned to Swindon as Divisional Locomotive Superintendent, a position which he held for six years. At the beginning of 1913 he was appointed Assistant Locomotive Works Manager at Swindon, and he was promoted to be Works Manager in 1920. Two years later he became Works Assistant, and in 1923 Principal Assistant, to the Chief Mechanical Engineer. In 1931 Sir William Stanier accepted the appointment, as from January 1, 1932, of Chief Mechanical Engineer of the L.M.S.R. In the autumn of 1936 he was appointed by the Government of India as a member of the (Wedgwood) committee of inquiry into the position of the Government-owned railways in that country; he returned from India in the spring of 1937. He was appointed a member of the Government of India committee of inquiry into the design and purchase of Pacific locomotives in July, 1938. Sir William Stanier is a Member of Council, and has been a Vice-President, of the Institution of Mechanical Engineers; and he was President for the session 1941-42. He was President of the Institution of Locomotive Engineers in 1936-37 and in 1938-39. In July, 1939, he was elected a member of the Permanent Commission of the International Railway Congress Association. He is Chairman of the Mechanical & Electrical Engineers' Committee of the Railway Executive Committee. Sir William Stanier received his Knighthood in the New Year Honours, 1943. He was elected a Fellow of the Royal Society last month. In 1943 he was elected a Member of the Athenæum Club, under rule II of the club which empowers the election of persons eminent in science, literature, or the arts, or for public services.

(*See editorial article, page* 379)



*Sir William Stanier*

Chief Mechanical Engineer, L.M.S.R., 1932-44

*Lafayette*]

[*London*

*Mr. C. E. Fairburn*

Appointed Chief Mechanical Engineer, L.M.S.R.

Mr. George Wilbur Spinney has been elected a Director of the Canadian Pacific Railway Company, in succession to the late Sir Edward Beatty. Mr. Spinney is President of the Bank of Montreal.

Mr. C. E. Fairburn, M.A., M.Inst.C.E., M.I.E.E., M.I.Loco.E., Acting Chief Mechanical Engineer & Electrical Engineer, London Midland & Scottish Railway, who, as recorded in our last week's issue, has been appointed Chief Mechanical Engineer, had a brilliant career at Oxford, where he took three First Classes—in Mathematical Moderations, Mathematical Final Schools and Engineering. In 1908 he was awarded a Hulme Exhibition, which is for graduates only, at Brasenose College for four years. Mr. Fairburn was a pupil under Sir Henry Fowler at Derby from 1910 to 1912, and at the same period studied metallurgy at Sheffield University. In the latter year he joined the Railway Department at Siemens Bros. Dynamo Works Ltd., and in 1913 took charge of the outdoor erection work for the Newport-Shildon electrified line of the North Eastern Railway; between then and 1916 he was responsible for placing the overhead line and the locomotives in service. He then joined the Royal Flying Corps as Experimental Officer, and eventually commanded an experimental squadron as Major. He is now a Lt.-Colonel in the Engineer & Railway Staff Corps, R.E. (T.A.). In 1919 he joined the English Electric Co. Ltd. to organise a railway electrification department. He became General Manager of the Preston Electrical Works in 1926, of the Car Works in the next year, and of the Stafford Works in 1928, retaining charge of the two works at Preston. He was in control of the Traction Department at the same time. In 1931 he

returned to London as Engineer & Manager of the Traction Department, with responsibility for all classes of railway material, and in 1933 was appointed in addition Chairman of the Contractors' Committee for the electrification of the Polish State Railways, the contract for which was held jointly by the English Electric Co. Ltd. and Metropolitan-Vickers Electrical Co. Ltd. In 1934 Mr. Fairburn was appointed Electrical Engineer of the L.M.S.R. He became Deputy Chief Mechanical Engineer & Electrical Engineer in 1937, and since October, 1942, has been Acting Chief Mechanical Engineer & Electrical Engineer, during the time that Sir William Stanier has been seconded to the staff of the Minister of Production.

(*See editorial note, page* 377)

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Major F. L. C. Bond, D.S.O., who, as recorded in our April 7 issue, has retired

***Major F. L. C. Bond***

Vice-President & General Manager, Central Region, C.N.R., 1939-44

from the position of Vice-President & General Manager, Central Region, Canadian National Railways, was born in Montreal and received his technical education there; he graduated in Engineering at McGill University in 1898. He joined the former Grand Trunk Railway as Assistant to the Resident Engineer at Montreal, and in 1901 was Engineer in charge of the construction which provided the Canadian National system with 851 miles of double-track line from Montreal to Chicago. After a brief stay in New York as Night Superintendent on the construction of the Park Avenue Tunnel of the underground railway system, Major Bond returned to the Grand Trunk Railway to become Resident Engineer, and later Division Engineer, Eastern Division. During the war of 1914-18 he served overseas with the 10th Battalion, Canadian Railway Troops; he was mentioned twice in dispatches and was awarded the Distinguished Service Order. After demobilisation he was appointed Chief Engineer of the Grand Trunk Railway, and on the amalgamation of the lines into the Canadian National Railways he became Regional Chief Engineer with headquarters at Toronto. In 1924 he was made General Superintendent at Montreal, and in 1936 was appointed General Manager of the Central Region, which comprises the lines from Riviere du Loup to the head of the Great Lakes. In 1939 he was promoted Vice-President & General Manager of the region.

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L.M.S.R. Appointments

The L.M.S.R. announces the following appointments:—

Mr. J. Smith, District Goods & Passenger Manager, Edinburgh, to be District Goods & Passenger Manager, Ayr, *vice* Mr. R. Marshall, retiring.

Mr. R. D. Kerr, Assistant to Commercial Manager (Passenger), Glasgow, to be District Goods & Passenger Manager, Edinburgh.

Mr. W. R. Davies, Agent for Accounts, London, to be Assistant (Commercial Development), Chief Commercial Manager's Department, Watford, H.Q.

Mr. F. Grundy, Goods Agent, St. Pancras & Somers Town, to be Assistant to Chief Commercial Manager (Goods), Watford, H.Q., *vice* Mr. J. R. Pike, promoted.

Mr. A. J. D. Thomas, Senior Clerk (Freight Trains), Chief Operating Manager's Office, Watford, H.Q., to be Dock Superintendent, Heysham.

Mr. H. Eccles, Assistant District Goods Manager, Warrington, to be Assistant District Goods Manager, Liverpool, *vice* Mr. W. L. Pridmore, retiring.

Mr. P. G. Price, Joint Goods Agent, Burton (L.M.S.R. & L.N.E.R.), to be Assistant District Goods & Passenger Manager, Bristol, *vice* Mr. R. H. Baker, deceased.

Mr. J. T. Cox, Assistant Works Superintendent, Carriage & Wagon Department, Wolverton, to be Chief Carriage & Wagon Outdoor Assistant, Chief Mechanical & Electrical Engineer's Department, Derby, H.Q., *vice* Mr. F. S. Barnes, retiring.

Mr. F. W. Youd, District Controller, Huddersfield, to be Divisional Controller (Passenger Services), Office of Divisional Superintendent of Operation, Manchester, *vice* Mr. W. Dawson, promoted.

Mr. R. Ankers, Assistant Divisional Controller (Freight Services), Office of Divisional Superintendent of Operation, Manchester, to be District Controller, Huddersfield.

Mr. T. P. Strafford, District Controller, Rowsley, to be District Controller, Carlisle, *vice* Mr. R. Bagwell, promoted.

Mr. R. North, Assistant Divisional Controller (Freight Services), Office of Divisional Superintendent of Operation, Derby, to be District Controller, Rowsley.

Mr. H. R. Patrick, Inspector, Operating Manager's Office, Glasgow, to be District Controller, Motherwell, *vice* Mr. D. Shankland, retiring.

Mr. H. Leach, Chief Transit Clerk, District Goods & Passenger Manager's Office, Chester, to be District Traffic Agent, Whitehaven, *vice* Mr. J. L. Woodhead, promoted.

Mr. C. W. Jones, Goods Agent, Curzon Street, to be Goods Agent, Lawley Street, *vice* Mr. P. G. Price, promoted.

Mr. R. H. Wilson, Goods Agent, Aston, to be Goods Agent, Curzon Street.

Mr. J. H. Potts, Goods Agent, Central & Monument Lane, to be Goods Agent, Aston.

Mr. A. Pyett, Chief Clerk, Curzon Street, to be Goods Agent, Central & Monument Lane.

Mr. J. Hollingsworth, Goods Agent, Gloucester, to be Joint Goods Agent, Burton (L.M.S.R. & L.N.E.R.), *vice* Mr. P. G. Price, promoted.

Mr. M. G. E. Lambert, District Goods Manager's Office, Broad Street, to be Goods Agent, Gloucester.

Mr. W. H. Bourne, Goods Agent, Kidderminster, to be Goods Agent, Wednesbury, *vice* Mr. W. Broadhurst, retiring.

Mr. J. T. Wiggans, Stationmaster, Bolton (Trinity Street), to be Stationmaster, London Road, Manchester, *vice* Mr. D. T. Evans, retiring.

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Mr. F. S. Whalley, M.C., a Director of Robert Stephenson & Hawthorns Limited, has been appointed Chairman of the company. Mr. Whalley is Vice-Chairman & Managing Director of the Vulcan Foundry Limited, a Director of the North British Locomotive Co. Ltd., and President of the Locomotive Manufacturers' Association.

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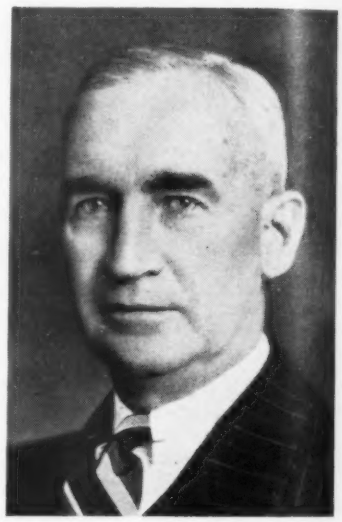
Mr. James Farrand Pringle, Vice-President & General Manager, Atlantic Region, Canadian National Railways, who, as recorded in our April 7 issue, has been appointed Vice-President & General Manager, Central Region, is a graduate of Queen's University, Kingston. In 1907 he became Resident Engineer on construction work for the former National Transcontinental Railway, and afterwards was an Assistant Engineer during the construction of the Welland Ship Canal. He joined the Royal Canadian Engineers for war service, and was demobilised in 1919. Mr. Pringle then entered the Engineering Department of the Canadian National Railways at Montreal; he later became Transportation Engineer to the Chief of Transportation, and in 1925 was appointed Assistant General Superintendent of Transportation at Toronto. In 1930 he was one of a number of C.N.R. technical experts loaned to assist in the reorganisation of the National Railways of Mexico. After returning to Toronto he was appointed General Superintendent of Transportation, which position he held until 1936, when he became General Superintendent of the Southern Ontario District. In September, 1941, he was appointed Chief of Transportation for the system. In January, 1943, he was made General Manager, and in October, Vice-President & General Manager, Atlantic Region.



***Mr. J. F. Pringle***

Appointed Vice-President & General Manager, Central Region, C.N.R.

# TRANSPORT SERVICES AND THE WAR—237

### Easter Holiday Travel

The injunctions to avoid unnecessary travel over the Easter holiday period seem to have been more successful this year than in any previous holiday since the outbreak of war, possibly because there is wider appreciation of the need. There was not much rush for trains on Thursday of last week, when passenger crowds at London stations were generally below normal; at only one terminus, namely, Euston, were they believed to be larger than a year ago. An important contributory cause of the light traffic was probably the narrow choice of convenient coastal resorts resulting from the ban on entry to southern and eastern coastal areas. It was mainly with local traffic on Easter Monday that traffic assumed holiday dimensions. For most of the trippers near London the destination was Windsor, where the flat racing season opened. Bookings were also heavy to riverside resorts, and points in the Kent hills and Surrey woods. In general, it appeared that the Minister of War Transport should have had little cause to complain of unnecessary Easter journeys.

### London Inter-Station Bus Route

From Wednesday of last week, April 5, the running of the inter-station bus services, provided for the convenience of railway passengers arriving at main-line London termini who are unable to obtain a taxi to take them to another main-line station, was improved. Buses now leave at half-hourly intervals and run on a circular trip from Waterloo calling at Kings Cross, Euston, Paddington, and Victoria, and then back to Waterloo. Similarly, a complementary service runs in the opposite direction, namely, Waterloo, Victoria, Paddington, Euston, Kings Cross, and Waterloo. The first buses in each direction are as follow :—

| | | |
|---|---|---|
| Waterloo ... ... ... ... | dep. | 6.11 p.m. |
| Victoria ... ... ... ... | ,, | 6.25 ,, |
| Paddington... ... ... ... | ,, | 6.43 ,, |
| Euston ... ... ... ... | ,, | 6.58 ,, |
| Kings Cross ... ... ... | ,, | 7.07 ,, |
| Waterloo ... ... ... ... | arr. | 7.21 ,, |
| Waterloo ... ... ... ... | dep. | 6.26 p.m. |
| Kings Cross ... ... ... | ,, | 6.45 ,, |
| Euston ... ... ... ... | ,, | 6.54 ,, |
| Paddington... ... ... ... | ,, | 7.09 ,, |
| Victoria ... ... ... ... | ,, | 7.26 ,, |
| Waterloo ... ... ... ... | arr. | 7.36 ,, |

There is a half-hourly service continuously until the following times :—

| | | |
|---|---|---|
| Waterloo ... ... ... ... | dep. | 12.11 a.m. |
| Victoria ... ... ... ... | ,, | 12.25 ,, |
| Paddington... ... ... ... | ,, | 12.43 ,, |
| Euston ... ... ... ... | ,, | 12.58 ,, |
| Kings Cross ... ... ... | ,, | 1.07 ,, |
| Waterloo ... ... ... ... | arr. | 1.21 ,, |
| Waterloo ... ... ... ... | dep. | 11.56 p.m. |
| Kings Cross ... ... ... ... | ,, | 12.15 a.m. |
| Euston ... ... ... ... | ,, | 12.24 ,, |
| Paddington... ... ... ... | ,, | 12.39 ,, |
| Victoria ... ... ... ... | ,, | 12.56 ,, |
| Waterloo ... ... ... ... | arr. | 1.06 ,, |

Thereafter, there are other journeys, as under :—

| | | |
|---|---|---|
| Waterloo ... ... ... ... | dep. | 3.03 a.m. |
| Kings Cross ... ... ... | arr. | 3.17 ,, |
| Kings Cross ... ... ... | dep. | 3.22 a.m. |
| Waterloo ... ... ... | arr. | 3.36 ,, |
| Waterloo ... ... ... ... | dep. | 3.41 a.m. |
| Kings Cross ... ... ... | ,, | 4.00 ,, |
| Euston ... ... ... ... | ,, | 4.09 ,, |
| Running direct to Waterloo ... ... ... | arr. | 4.21 ,, |
| Waterloo ... ... ... ... | dep. | 4.26 a.m. |
| Victoria ... ... ... ... | ,, | 4.40 ,, |
| Paddington... ... ... ... | ,, | 4.58 ,, |
| Euston ... ... ... ... | ,, | 5.13 ,, |
| Kings Cross ... ... ... | ,, | 5.22 ,, |
| Waterloo ... ... ... ... | arr. | 5.36 ,, |

The fare for any stage remains unchanged at 1s. The reintroduction of this inter-station service, on December 20 last, was recorded in our issue of December 24, 1943, page 645.

### New Road and Rail War Vehicles

The familiar American jeep car (from G.P. = general purposes vehicle) has been adapted for rail or road work by means of a change of wheels which takes only a few minutes. The adpatation is the work of Major H. G. A. Mauldin, of Gidea Park, London, formerly in charge of the L.N.E.R. locomotive running shed at Stockton, and at present serving in the Middle East. The main object of the jeep road-rail car is for line inspection and reconnaissance by railway operating and construction companies. After an air attack, the car can be sent with technicians to look for traces of unexploded bombs on or near the track. It can tow a small trailer containing repairing gear.

The jeep is standard in every respect, except for a clamp on the front axle which holds the wheels in a rigid straight position and a turntable device at the point of balance under the gear-box. In order to change from road to rail the jeep is jacked up and rail trolley wheels are fitted. Four rail wheels are carried on special brackets without restricting passenger accommodation. The jeep's performance on rails is stated to be brisk, and the car readily traverses points, crossings, and badly-aligned track. A speed of 30 m.p.h. was obtained over very indifferent track, including curves and points, without any indication of the vehicle leaving the rails; the car has reached 42 m.p.h. on test.

*The jeep as a railcar in the Middle East*

### The Curfew in Dublin

The 9.30 p.m. curfew, which already applies to Dublin buses, was extended on April 3 to the trams. This is because of new restrictions on the consumption of electricity in Eire, requiring a reduction of 33⅓ per cent. in the use of electric current for traction purposes.

### The Irish Travel Ban

In referring to the alleged hardship on citizens of Eire in Great Britain inflicted by the ban on travel between Great Britain and Ireland, Mr. De Valera stated in the Dail on March 28 that travel permits from Eire to Great Britain and Northern Ireland had been issued to the extent of 66,203 in 1942; 61,758 in 1943; and 7,238 in January and February of the present year.

The renewal of residence permits for Northern Ireland has been refused to 1,475 natives of Eire during the past six months, according to a statement in the Belfast House of Commons by the Northern Ireland Minister of Home Affairs.

### Double Summer Time and Ireland

At 2 a.m. on April 2, Double Summer Time (2 hours in advance of G.M.T.) was introduced in both Great Britain and Northern Ireland, but not in Eire. Accordingly, the Great Northern Railway (Ireland), issued a notice saying that the company regretted that, due to the re-introduction of Double Summer Time in Northern Ireland, and the continuance of ordinary Summer Time in Eire, it had been found necessary to make changes in the departure times of specified trains. From April 2, the new timetables show Double Summer Time so far as concerns stations in Northern Ireland, and ordinary Summer Time for stations in Eire.

### Poland and Through Goods Traffic

As from February 1, the Ostbahn (the former Polish State Railways within the territory of the General-Gouvernement) has become a partner to the international agreement in respect of through goods traffic concluded between Germany on the one hand and Croatia, Serbia, Bulgaria, and Greece (the "South-eastern Countries") on the other. This enables consignments of goods between Poland and the Balkans to be shipped direct by using international through bills of lading. The rapid advance of the Russian Forces across the River Dniester, and on other fronts, is speedily making traffic under this agreement incapable of performance.

### The Nigeria Railway War Effort

After 4½ years of war the Nigerian Railway, in common with many other systems throughout the world, continues to operate at ever increasing pressure and under difficulties inseparable from emergency conditions. The annual revenue at more than £4,000,000 is nearly double that of the average pre-war year, and the 7,000,000 engine miles run represent a considerable advance over any previous performance. Expenditure also is rising more than proportionately, not only on account of increased costs of materials but because of greatly improved conditions of service for the African staff, including pensions, incremental scales, and cost-of-living allowances. Thus, although it is hoped to in-

crease the Reserve Fund to £1,000,000 and to maintain present contributions to the Renewals Fund at an adequate level, the possibility of an eventual return to less favourable results cannot be overlooked.

Moreover, the strain upon track, locomotives, rolling stock, and equipment must give rise to arrears of maintenance, and the necessary restriction of renewals will no doubt ultimately involve replacement at enhanced prices. There are, however, certain works which cannot be deferred. The relaying of the 160-mile section (at present laid with 45-lb. rail on steel sleepers) from Jebba on the River Niger northward to Minna can be postponed no longer. This will be done with 75-lb. rail and Nigerian timber sleepers, and is estimated to cost nearly £1,000,000, only just over half of which is available in the Renewals Fund. Various track improvements and alterations have been effected with a view to handling an increased coal output, and additional crossing stations and storage facilities have been provided to deal with increased traffic in general commodities.

A further six Beyer-Garratt locomotives have recently been received from the United Kingdom, and also locomotives and wagons from the U.S.A. which have been erected locally. These, of course, are of considerable value in moving the 1½ million tons which the Nigerian Railway is now called upon to transport during the course of a year. The railway-operated wharves and motor services are duly playing their part in the general activity, and 24-hour working of the former has materially improved the turn-round of shipping.

War conditions have not been permitted to delay the progress of the higher and apprentice training schemes for local personnel. Africans can now aspire to be accountants, storekeepers, stock verifiers, traffic inspectors, and workshop foremen. Locomotive drivers will soon, like the station staff, be recruited entirely locally. There is yet no indication of any slackening in the demands made upon the system, and the Nigerian Railway may look forward to a further period of hard work and relative prosperity.

### Forbidding a U.S.A. Rail Closure

An application by the Chicago, Burlington & Quincy Railroad to the Interstate Commerce Commission for authority to close down its 105-mile line from Sterling, Colorado, to Cheyenne, Wyoming, has been denied by a majority ruling of Division 4 of the I.C.C. Evidence given by the railway showed that the line was being operated at a loss, but two of the three commissioners held that abandonment was not justified in the public interest, because it would leave an exceptionally large area without adequate substitute transport facilities at a time when further agricultural development of the district was being undertaken. The dissenting commissioner, however, maintained that his colleagues were unduly apprehensive about the road situation, and that as in 1942, the best year for traffic over this route, the 1,952 sq. miles of area served by the railway produced a daily average of no more than 2¾ bogie wagonloads of rail freight, continued operation in such conditions was not justified. By a majority of two to one, therefore, closure of the line was not authorised.

### Employment of Soldiers on U.S. Railways

The United States War Department issued an order permitting soldiers, during their normal off-duty hours or while on leave, between December 1 and January 2, to work in railway stations or goods sheds at rates of pay to be agreed between the railway and the individual soldier. The service had to be voluntary, and was permitted only where adequate civilian labour was not available to handle the heavy holiday traffic; further, no special leave was granted to any soldier for the purpose, nor was the training of soldiers allowed to be interfered with in any way by their railway activities. The soldiers, while so employed, were expected to perform any tasks set by the railway officials, including the handling of express traffic, freight, and parcel post or other mail.

## Turkish Transport Difficulties

Although Turkey is still not a belligerent, she appears to be suffering acutely from wartime transport difficulties, in common with other neutral countries that are entirely surrounded by belligerents. This is a result of greatly increased traffics, shortage of rolling stock, and the impossibility of securing adequate replacements. An agreement just concluded between Turkey and Germany provides for the supply by the latter of eight locomotives and 130 wagons to the Turkish State Railways this spring. In addition, Germany is to supply a number of commercial aeroplanes for the expansion of the Turkish air services, principally in the eastern parts of Anatolia, adjacent to Russia and Persia. The Ankara municipality recently placed orders for 30 motorbuses with German firms, and another 20 are to be supplied from Switzerland. Istanbul municipality is credited with the intention of ordering 5 motorbuses from Sweden. Later, but unconfirmed, reports stated that the Swiss order has been suspended in view of difficulties between Turkey and Switzerland on trade questions. Nevertheless, late in January the Turkish Ministry of Commerce placed an order with Swiss manufacturers for motor lorries to be supplied within the next few months.

General Ali Fouad Cebesoy, the Turkish Minister of Transport, recently made an extensive personal inspection of traffic conditions on both the Thracian and Anatolian sides of the Sea of Marmara, and subsequently issued a public statement. He said that both the Istanbul railway terminals (Istanbul-Sirkedji, in Europe, and Haidar Pacha, in Anatolia) are heavily overtaxed at present. With a view to easing the position, the Ministry of Transport has arranged to divert as much traffic as possible, mainly goods traffic, between Thrace and Anatolia *via* a number of ports on the Sea of Marmara. Loading and unloading facilities at these ports are now being adapted to the standard required and increased in number.

So far as passenger traffic is concerned, the considerable increase in the population of Istanbul has resulted in trains from and to this town being greatly overcrowded. Previously, inhabitants of Istanbul who had desired to settle again in their native places in Anatolia had been granted facilities in the way of reduction of fares and rebates on rates for the conveyance of their belongings, but Istanbul still proves very attractive to the country population, despite an increase in railway fares. Tram fares in Istanbul were increased by an average of 25 per cent. on January 1, 1944, but bus fares, and fares on the Galata-Pera underground railway, were left unchanged. A proposal of taxi owners for an increase in taxi fares met with a refusal from the traffic department of the municipality. Employees and workers of the municipal traffic undertakings have been granted an increase in their salaries and wages as from January 1 last. The number of passengers carried by the local boats plying between the Galata bridge and the various landing places along the shores of the Golden Horn was more than doubled in 1943, totalling about 7,000,000, compared with an average of 3,000,000 in former years. This is said to be a result of the augmented population of Istanbul, as well as of the curtailment of the former extensive bus traffic. Fares were increased by an average of 30 per cent. on the suburban lines of Ankara, Istanbul, and Smyrna, on February 1 last. The demand for accommodation in passenger trains has resulted in a considerable shortage of sleeping-car facilities, and a lucrative "black market" in sleeping-car tickets has sprung up.

There is also a "black market" in goods wagons because of the severe shortage of rolling stock. Persons of speculative tendencies have been successful, the Minister stated, in having wagons assigned to them for the alleged purpose of conveying their own goods, and have subsequently ceded the wagons to shippers of goods actually in need of wagons and who were prepared to pay large sums to secure loading space. This practice is now the subject of strict counter-measures, and in future wagons are to be assigned exclusively to persons and firms able to prove that they actually need them.

The total receipts of the Turkish State Railways in 1943 aggregated approximately £T106,000,000. Since the introduction, in the middle of 1943, of new regulations concerning the conveyance of goods and livestock and the carriage of passengers on the Turkish State Railways, receipts increased by some £T4,000,000 to the end of the year, compared with the same period in 1942, and even more favourable results are expected.

One of the major tasks of the Turkish Ministry of Transport is the improvement of the country's maritime communications. Receipts of the State-owned shipping have totalled £T16,000,000 per annum in past years, although the thorough reorganisation of loading and unloading facilities in the ports has enabled the use of shipping space to be increased by about 60 to 70 per cent. The conveyance of coal from the Zongouldak-Eregli coal region on the Black Sea coast to the various centres of consumption increased by some 250,000 metric tons in the second half of 1943, compared with the corresponding period of 1942. The Fuel Board specifies the quantity of coal to be supplied, and the Ministry of Transport arranges for its conveyance.

Of the French merchantmen acquired in 1943, seven have been placed in service after having undergone temporary repairs. New docks and dock installations are to be provided in a number of ports as soon as it is possible to secure the necessary materials. Docks in the Bosporus and on the Golden Horn will be given priority. New laws are being prepared concerning a modification in the shipping administration and a reform in the training of men desirous of entering the maritime service.

# Parliamentary Notes

### L.N.E.R. Bill

The London & North Eastern Railway Bill was reported to the House of Commons on March 30 with amendment from the Committee on Unopposed Bills, along with a report on the Bill.

The Bill as amended and the report were ordered to lie on the Table, and the report was ordered to be printed.

### L.M.S.R. Bills

The House of Lords on April 4 appointed the following as a select committee to consider the London Midland & Scottish Railway Bill, and the London Midland & Scottish Railway (Canals) Bill :—Lord Milne (Chairman), Earl Poulett, the Earl of Cork & Orrery, Lord Chesham and Lord Nathan.

# Questions in Parliament

### Railway Employees' Pay Slips

Sir Charles Edwards (Bedwellty—Lab.) on March 23 asked the Parliamentary Secretary to the Ministry of War Transport whether he was aware that the G.W.R. railwaymen on the Western Valley branch, Monmouthshire, had, up to the present, been receiving, for inspection, pay slips to enable them to check their wages, after which they returned them to the office where they were kept as a record ; whether he would see that in future these employees were served with pay sheets which they might keep for a record of wages and income tax paid under Pay as you Earn ; and was he aware that the company opposed this only because of shortage of paper.

Mr. P. J. Noel-Baker (Parliamentary Secretary, Ministry of War Transport) wrote in reply : I am making enquiries and will communicate with Sir Charles Edwards.

### Closing of Railway Canals

Mr. J. H. Wootton-Davies (Heywood & Radcliffe—C.) on March 29 asked the Parliamentary Secretary to the Ministry of War Transport, whether he could make any statement regarding the future of the 243 miles of canal which the London Midland & Scottish Railway Company was proposing to close as being useless for navigation.

Mr. Noel-Baker stated in a written answer : I assume that Mr. Wootton-Davies refers to the canals mentioned in the London Midland & Scottish Railways (Canals) Bill now before Parliament. This Bill is awaiting Second Reading in another place ; if it is sent to a select committee, it may be the subject of a report by the Minister of War Transport. In the circumstances, I have no statement to make on the subject of the Bill at the present stage.

### Post-War Developments

Mr. T. Driberg (Maldon—Ind.) on April 5 asked the Parliamentary Secretary to the Ministry of War Transport if, in planning the post-war reorganisation and development of British railways, he would bear in mind the practice in force in New York City, where all trains were transferred in the outer suburbs from steam to electric traction, thus abating the smoke nuisance within the city.

Mr. Noel-Baker wrote in reply : Yes, Sir.

### Railway Wagons

Mr. Alfred Edwards (Middlesbrough East —Lab.) on April 5 asked the Parliamentary Secretary to the Ministry of War Transport how many railway wagons of 20 tons and over were at present in use in this country ; and whether, in view of the advantages in using such wagons, he would in future increase the output of wagos of 20 tons and over.

Mr. P. J. Noel-Baker (Parliamentary Secretary, Ministry of War Transport) stated in a written answer : There are 19,000 railway wagons of special type which have a capacity of 20 tons or more, and 49,000 mineral wagons. The railways have encouraged their use for many years, but the increase in their numbers has been limited by the fact that the facilities and equipment at many loading and unloading points are inadequate for such large wagons.

### L.P.T.B. Working Expenses

Sir Herbert Williams (South Croydon—C.) on April 5 asked the Parliamentary Secretary to the Ministry of War Transport if he was now in a position to make a further statement in respect of the working expenses of the London Passenger Transport Board.

Mr. Noel-Baker : As I explained to Sir Herbert Williams last week, there are two main reasons why the working expenses of the London Passenger Transport Board, and of the controlled railway companies, are not now published, except as a combined figure in the White Paper which is laid before Parliament every year. First, it is undesirable, for reasons of security, that it should be possible to compare the expenditure of the individual undertakings in the pool at different stages of the war, or to compare their expenditure during the war and pre-war periods. Second, under the financial arrangements made when the railways were taken under Government control, all the receipts and expenses of the controlled undertakings are pooled, and no clearances between them are made. Any figures which might be given for an individual undertaking would, therefore, be misleading. For these reasons, I am satisfied, after full consideration, that it would not be in the public interest to publish the working expenses of the London Passenger Transport Board.

Sir H. Williams : As I understand that the real reason is that we should tell the Germans how much bombing has been done to the railways, and as this information is always released about a month after that happens, and the full pictures appear in the newspapers, what point of security arises ?

Mr. Noel-Baker : No, Sir, I am afraid Sir H. Williams is wrong. A very great deal of important information is not published.

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HENRY BLACKLOCK & CO. LTD.—This company, the proprietor of "Bradshaw's Guide," has now returned to its London office at Bradshaw House, 5, Surrey Street, Strand, London, W.C.2, to which all correspondence should be addressed.

# The Late Mr. R. Holland-Martin

The following tribute to Mr. R. Holland-Martin, who died on January 27, appears in the current issue of the *Southern Railway Magazine* :—

By a trick of fate Mr. Robert Holland-Martin, C.B., our late Chairman, died on the very day of publication of the last issue of the *Magazine*, and by the time this one is in the hands of the staff, two months will have passed since his death. In that space the sense of shock and personal loss will, inevitably, have lessened as each one of us takes up anew the daily task.

None the less this magazine, written as it is for the Staff of the Railway, whom "the Chairman" loved to call his "Southern family," is the place for a permanent tribute in the Southern files, for we know that every one of our readers, be he Officer, Supervisor, Senior or Junior, would hold us guilty of a dereliction of duty were we to lessen the strength of it merely because the death of "the Chairman" has now passed into Southern history.

Mr. Holland-Martin was the ideal Chairman for a national undertaking. His inventive and inquiring brain ensured that all concerned with the running of the railway were constantly alert, searching for the best results and the methods of achieving them; his wide knowledge of people and things, and his typically English sense of moderation, enabled him to take the day's work in sturdy stride; and above all his honesty and loftiness of character and his kind and gentle heart called forth the affection and respect of everyone on the railway who knew him, and they numbered hundreds all over the system.

His long experience as a railway director enabled him to steer with sure hand amid the doubts and difficulties of Government control as applied to "Direction" and "Management"; this made smooth the way between himself and his Officers, and great is the debt they owe him in this respect. His wise advice and generous help were always at their side. They knew that if things went right he was quick and generous to praise, whereas if they went wrong he would try to shoulder the blame himself. He was indeed a leader of highest quality.

He had the most lovable idiosyncrasies; a perfect genius for mislaying papers and documents, not being in the least disconcerted thereby because he knew that sooner or later they would turn up (more often than not they were to be found in the famous hand-portmanteau which he insisted on carrying round with him wherever he went). He would take other people's hats and cheerfully rush off to new appointments with headgear that neither fitted nor suited him, to all of which he was serenely oblivious until someone pointed it out. Time with him was merely a commodity to be used to the utmost and never to be regarded in terms of mere hours or minutes, punctuality or lateness being all one to him; in truth he was as often over-early as over-late, yet he never wasted a minute; life to him was a pulsating thing, and it had to be lived, vigorously.

He loved this railway deeply and wore with pride the railwaymen's badge in the lapel of his coat; he laboured to make his Southern family happy and successful, and anything in which the welfare of the staff was concerned automatically caught his interest. He fought for his shareholders in every way that a Chairman should, allowing that the National interest should have priority when he was convinced that it was for the general good (he was unlikely ever to go astray in such matters, for he had a shining sense of right and wrong). No man spared himself less than he: well knowing the risks he was running, he deliberately kept straight on because he believed it was his duty to the country and the Southern that he should do so.

He died as he wished, in action to the last. His example in some measure compensates us for the loss we have suffered, and his memory will remain, vivid and beloved, throughout the years to come.

For him we lower all our flags, in grateful salute and affectionate farewell.

# Ministry of War Transport Accident Report

## Ilford, L.N.E.R., January 16, 1944

Lt.-Colonel Sir Alan Mount, assisted by Major G. R. S. Wilson, inquired into the serious collision which took place in a dense fog at about 7.20 p.m. on January 16, 1944, on the up through platform line at Ilford Station on the L.N.E.R., when the 2.40 p.m. express, Norwich to Liverpool Street, having passed a number of signals at danger, ran at a speed of 20 to 25 m.p.h. into the 2.38 p.m express, Yarmouth to Liverpool Street, which was about to re-start on instructions from the signalman after a stop at the signal box. Dense fog had persisted all through the previous night and until between 1 and 2 p.m., when it cleared and the fogmen were dismissed. It descended again between 6.30 and 7 p.m., if anything worse than before, and the fogmen were recalled. There was no undue delay, but unfortunately none had reached the up line posts. The diagram on page 401 shows the lines and signals concerned in the accident, with the signal aspects displayed at the time.

There was considerable damage to both trains, which were crowded; nine passengers—three of them members of the U.S. Forces—lost their lives and 28 were detained in hospital. Twelve of the latter were members of the U.S. Forces. Relief work in all its branches was prompt and efficient and credit is due to the organisations concerned as well as to local doctors, an American doctor, and nurse, who were travelling in the Yarmouth train, to passengers and members of the public. The last of the casualties was removed at 9.20 p.m. The colliding engine penetrated the last coach of the train in front for about half its length, almost completely demolishing the body. The next vehicle was partially overturned. The engine and first five coaches were undamaged and went forward with the passengers at 8.55 p.m. In the Norwich train the leading van and the following corridor vehicle were telescoped together for about half their length, but the remaining vehicles were neither derailed nor seriously damaged.

Sykes lock-and-block (Great Eastern pattern) is in force throughout, pending the installation of colour-light signalling and continuous track circuiting, deferred on the outbreak of war. The equipment was in proper working order and no irregularity in the block working took place. When the layout at Seven Kings was remodelled recently in the course of ordinary renewals the East box was abolished and the home signal at Goodmayes West and the outer and inner homes at Seven Kings became colour lights, with aspects arranged to give the appropriate inner and outer distant indications for the boxes in advance. In consequence Seven Kings signal box is exempt from the fog block regulations. Because of the very short section between Ilford East and West boxes the former may not give—even in clear weather—train out of section to Ilford Carriage Sidings signal box until a train has reached the rail contact in advance of Ilford West. (See plan).

The trains involved in the accident were preceded by one from Clacton, which, due to the bad weather conditions, took 33 minutes to run the six miles from Chadwell Heath to Stratford. The driver had no great difficulty in seeing the colour-light signals, although he drove on the right. Driver Brown, on the Yarmouth train, driving on the left, was stopped at the second and third of these signals, which he only saw at short range, being stopped at both of them. He missed the following three semaphores and heard no detonators at Ilford East home signal, which has a two-shot machine working with it. He just caught sight of the lower arm of the Ilford West home signal and stopped 110 yd. in advance. Going to the box, he was told after a short wait that he could proceed. Immediately after that a message was received that the train from Norwich had over-run the Seven Kings signals and an attempt to go back and stop it was made by the station inspector who had come to the box. The collision occurred, however, before he could do anything. The signalman at Seven Kings kept his signals at danger, intending to clear his outer home as the Norwich train approached, and there can be no reasonable doubt that the signals displayed the indications shown on the diagram when that train passed him. Hearing it approaching his box he showed a red light as the engine passed. He at once gave "train running away" and telephoned to Ilford West. Ilford Carriage Sidings tried to put down detonators but could not and shouted at the driver through a megaphone. At Ilford East the signalman also shouted and showed a red light, which was seen by the driver.

Exploded detonator cases were found in the co-acting machine working with Ilford East home signal, but they were not exploded by the Yarmouth train, nor, indeed, since the signalman took duty at 2 p.m. He said it was not his responsibility, on taking duty, to verify that fresh detonators were in place. They were usually promptly replaced either by the signal fitter, whose hut is close to the box, or a platelayer or one of the station staff. The station inspector said it was not usual for the signalman to report to him that replacement was required and that the signalman generally took the necessary steps.

The train from Norwich was driven by T. E. Latter, with fireman F. W. Trout who, booked to work the Ipswich pilot engine, was sent to fire for Latter 40 minutes before the train was due to leave that place. He had worked to London only three or four times at infrequent intervals, the last time five months before the accident. He did not know that the colour-light signals had been installed at Goodmayes and Seven Kings, but Latter did and had passed them already 11 times. Latter said that he ran into a blanket of fog before Goodmayes and had never before experienced such bad conditions. He saw none of the colour-light signals himself; he relied on Trout to observe them while he, on the right of the engine, looked for the signal boxes and fogmen. His statement as to these signals and Trout's observation of them was vague, but he stated that Trout had said "green light" on passing Seven Kings inner home and "righto" on passing the preceding signal. Neither man thereafter saw any semaphores. Latter saw no signal box until Ilford East, where the red light and shouting warned him. He applied the brake fully and estimated that the speed on colliding was 15 to 20 m.p.h. He seems to have thought that Ilford Carriage Sidings box was switched out, but why is not clear, as it is always open. He said he was reassured by the green light at Seven Kings inner home that he was clear to the carriage sidings starting signal, which he assumed to be off, as he got no detonator and was relying on fogmen being out. It was not his regular practice to rely on his fireman and he would not have relied on Trout had he known the latter had not been over the road for five months. Fireman Trout's statement was incoherent and contradictory. Both men's colour vision was normal.

No criticism arises as regards the operation of the signalmen. Driver Latter apparently knew where he was on passing Goodmayes and Seven Kings—at 30 to 40 m.p.h., according to the signalmen—and had the advantage of well-sited colour-light signals about a mile after he entered the fog. No doubt visibility was exceptionally bad, but if he had made an appropriate reduction of speed in good time and had crossed the footplate to try and see these signals himself, his task would have been appreciably lightened. Instead, he left this to Fireman F. W. Trout, which was not unnatural under the prevailing conditions, provided he could be relied on. Latter had not troubled to find out that Trout had not been over the road for a long time. This seems extraordinary in a man of his age and experience, particularly in wartime when crews are less likely to remain together. Notwithstanding this, however, there appeared to be no doubt that Latter was satisfied by Trout's assurances and allowed the train to run on with little reduction of speed—Carriage Sidings Box being passed at 20 to 30 m.p.h. according to the signalman—on the assumption that subsequent signals (which he could not see) would be clear unless a detonator was exploded. He thus contravened Rule 127 (xxii); but apart from that, his failure to run with the caution which the circumstances required, and which is usually shown, indicated a very unimaginative state of mind. Indeed, it is difficult to find any feature which relieves him from serious responsibility, though some share must be borne by Trout. Both men have satisfactory records with considerable length of service in their respective grades, and the difficulties of operation under the conditions described should not be overlooked.

For instance, though Latter did not suggest that he had lost location, he suddenly encountered very poor visibility, which continued for four or five minutes until the collision occurred. There seems little doubt that this, and the darkness, must have contributed to misjudgment of speed over a considerable distance; hence Trout's fleeting views of the colour-light signals. In other words, Latter did not react sufficiently quickly to the conditions with which he was confronted, and although it is true that Brown of the Yarmouth train ahead was more successful, driving from the left-hand side, he also over-ran the Ilford station signals.

### Recommendation and Remarks

Although the circumstances of the observation of the colour-light signals in this case were exceptional, the fact that they were ineffective affords further confirmation of the conclusions of the 1927 Automatic Train Control Committee, which reported as follows in 1930:—

"With regard to multiple aspect signals, which alternately fulfil the functions of warning and stop signals, we realise the difficulty which exists of providing a method of protection or control, which from the point of view of cost is likely to prove acceptable. It is true that many

such signals are of the powerful focused type, and are therefore more readily seen, even in bad atmospheric conditions, both by day and night, than the usual semaphore arm and oil signal light. The necessity, therefore, for further protection or control where this method of signal lighting is installed appears to be less urgent than in the case of similar signals with ordinary lighting. But cases of accident demonstrate the fact that even with this type of powerfully lighted signal, misreading of signals sometimes occurs, and the safeguard afforded by better lighting is not therefore complete."

The question of co-acting detonator placers at stop signals was also considered by the 1927 Committee as an "indirect" method of control in those cases where warning control at the distant signal is not applicable, e.g. for the immediate protection of fouling points. But such detonator placers afford no certain protection against a following collision, particularly when trains are running in close succession, as immediate replacement is not always practicable if detonators are exploded by the first train. The co-acting machine at Ilford East, whose function was to give additional protection to the converging junction at Ilford West, was a case in point; as it happened, it was fortunate that detonators were not in position when the Yarmouth train passed, for the collision would then have taken place earlier, and been more severe. The arrangements, however, for renewal of detonators in such machines and for reporting the circumstances of their explosion may be in need of review, as it appeared that at Ilford East no action had been taken for a considerable time.

Detonator placers worked from the signal box frame are in a different category, and it is likely that if Ilford carriage sidings box had been so equipped, the signalman would have been able to get a detonator down in front of the Norwich train, which should have warned Driver Latter in time. The value of this apparatus in emergency is recognised, and it is the practice to instal it in signal boxes on important lines in connection with new or altered work, with colour-light as well as semaphore signals. Extensive resignalling is to be undertaken on this section of line as soon as opportunity offers, and the inclusion of this equipment is recommended; at boxes where such provision has been made, it is incumbent on the signalman under Rule 94 to place an emergency detonator on the line when he requires to stop a train in fog, whether a fog-signalman has arrived at his post or not.

Apart from emergency apparatus of this kind, it seems likely that in the present case nothing less than automatic train control in the form of a warning brake application at one or more of the semaphore or colour-light signals concerned would have saved the situation. In spite, however, of this and other instances where colour-light signals have been passed at danger, the view expressed by the committee in 1930 that the necessity for control is less urgent with this type of signal, still appears to apply, especially where the installation is continuous, as will be the case on this section.

The colour-lights concerned are immediately to the left of the line at eye level, namely, in the best position for a driver of a left-hand driven engine, the company's standard for new construction. The engine of the Norwich train, built in 1920, had right-hand controls, and there seems no doubt that this contributed to the accident. The company still has a number of such engines, but they are being gradually eliminated, to the advantage of the sighting of signals in their standard position on the left of the line, particularly in adverse weather.

The general question of A.T.C. was again reviewed in the report on the accident at Castlecary on this company's system in December, 1937. It was then suggested that, in view of the difficulties of combining two-indication warning control with multiple-aspect colour-lights, a not unsatisfactory compromise for the time being (pending further examination of the problem in relation to existing and future operating conditions in this country) would result by omitting control under multiple-aspect signalling, while applying it under the two-aspect system.

Besides the wide extension of colour-light signalling in various forms, close attention was being given to A.T.C. during the years preceding the outbreak of war. The G.W.R. had practically completed the equipment of its system with control of the warning (contact) type, after some 30 years' development. The L.M.S.R. was conducting experiments with warning control of the non-contact type, which are continuing. The L.N.E.R. was also experimenting with apparatus of the latter type between Glasgow and Edinburgh, but the outbreak of war stopped work.

The 1927 committee (and the earlier committee of 1921) summarised all the cases of accident from 1911 onwards, into which Ministry inquiries were held, in relation to the probable effect of control equipment in one form or another. Their researches showed that during the 10 years ended 30/9/1921, it would have proved effective in 71 of the 193 accidents, or 37 per cent.; in the next eight years ended 30/9/1929, the figure diminished to 29 per cent. (50 cases), although train mileage increased from an average of 372 to 392 millions. Statistics prepared subsequently show that for the 10 years ended 30/9/1939, during which 134 Inquiries were held, the proportion was again lower at 25 per cent., representing 34 cases, the average train mileage having increased still further to 430 millions.

Although the basis of these statistics may seem arbitrary, since only those accidents are included which for one reason or another were selected for formal inquiry, the improving trend, as indicated by the foregoing figures, is significant. Although it should also be borne in mind that some of the 155 accidents during these 28 years were primarily, and possibly mainly, due to signalmen allowing trains to approach contrary to regulations, it seems undoubtedly true that in some measure the improvement may be ascribed to the assistance afforded to drivers by the extensions referred to of warning control and of colour-light signalling, including colour-light distant signals on high-speed main lines.

There appears to be no reason why the improvement should not be maintained, as the tendency after the war will be towards the more extended use of colour-light signalling for main line and suburban traffic. This eventually, while improving safety, does not require equipment on the locomotive, and every installation is of immediate benefit to the operation of all traffic on the line concerned. It cannot, however, be regarded as a complete substitute for A.T.C., and, in any case, the majority of main line mileage is likely to remain for some years signalled under the two-aspect (mainly semaphore) system, which will have to cater for rising train speeds and traffic density. While the present time is not opportune to formulate

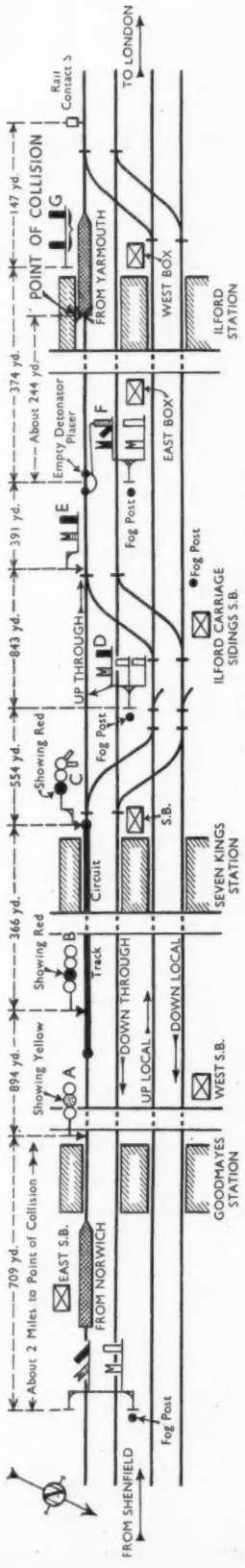


***Diagram illustrating circumstances of collision at Ilford, L.N.E.R.,***

Train from Yarmouth ran by signals *F* & *G*, train from Norwich ran by signals *B*, *C*, *D*, *E*, *F*. No fogmen had reached the up-line posts. No detonators in machine at signal *F*. Fog block being observed, except at Seven Kings. Sykes'lock-&-block (G.E.R. pattern) throughout. Ilford East unable to accept unless rail contact *S* actuated by preceding train. Signal *A* serves as distant for Seven Kings, signals *B* and *C* serve as outer and inner distants for Ilford carriage sidings. All signalling apparatus in good order.

an agreed policy with regard to these inter-related questions, the early post-war years should afford a suitable occasion for a fresh review, in the light of past and current research.

## The Institute of Transport

### *Surrey Area Discussion Group*

To consider the possibility of inaugurating a discussion group to serve the Surrey area, members of the Institute were invited to attend a meeting on March 9 at the Offices of the London Passenger Transport Board at Reigate where, through the kindness of Mr. A. H. Hawkins, M.Inst.T., General Manager (Country Buses & Coaches), a room had been made available for the purpose. Mr. J. M. Leighton-Bailey (Member of Council) took the chair, and read a letter from Sir William Wood, the President, stressing the value of discussion groups.

Mr. J. A. R. Turner, A.M.Inst.T. (Southern Railway), gave a brief outline of how the proposal to form a group at Reigate had come into being, on account of the difficulty of members working in Dorking, Reigate and Redhill in attending meetings of the London group which were held at midday.

Mr. Leighton-Bailey outlined the organisation and conduct of a discussion group. He referred to the value of discussions and said that the total membership could be as many as 30 to allow for the various turns of duty of some members; the number present that evening (14) would be very suitable to inaugurate a group. It was necessary to have a Discussion Leader for each meeting who would preside and who would raise the main issues for discussion. The Discussion Leader would appoint a Recording Member for each meeting whose duty would be to compile an account of the sense of the discussion. This would be circulated to the members and a copy would be sent to the Secretary of the Institute.

The Chairman made it clear that normally those taking part in a discussion group should be young Associate Members together with a proportion of senior members to give the correct balance to the discussions. For those non-corporate members who were potential examinees it would probably be preferable for them to concentrate on their studies rather than devote time to discussion group meetings.

The motion that a Surrey Area Discussion Group be formed was carried unanimously. It was decided to hold the forthcoming meetings at 5.45 p.m. in Room 12 on the ground floor of the Board's offices, Lesbourne Road, Reigate.

The undermentioned subjects were submitted by various members present as being suitable for early meetings of the group:—The influence of transport on the location of industry and population; Transport and town planning; Problems of transport operation; Education and training for transport; Transport in relation to the State; Transport co-ordination. It was decided to select the first three for the next three meetings. It was agreed that Mr. Leighton-Bailey should lead the first discussion. Mr. G. J. Dickens, A.M.Inst.T. (L.P.T.B.), agreed to initiate the discussion on "Problems of transport operation," and Mr. A. F. Wallis (Southern Railway) accepted the position of Discussion Leader for the subject of "Transport and town planning."

Mr. E. C. Hill, L.P.T.B., Reigate, is to be Hon. Secretary of the group.

## Notes and News

**Railway Electrification in Slovakia.**—A power station on the River Vah now being built in connection with the electrification of the Slovak State Railways is expected to be completed during the current year. Its connected load is to be 96,000 kW. Two more power stations are to be built for the Slovak State Railways, a second one on the River Vah, and one on the River Morava, which forms the western frontier of the country.

**Eire Transport Bill.**—The (Eire) Transport Bill, 1944, passed the first stage in the Dail on March 30. The measure is described as "an Act to provide for the incorporation of a transport company, to be called Coras Iompair Eireann, and for the transfer to that company of the undertakings of the Great Southern Railways Company and the Dublin United Transport Co. Ltd.; to amend the law relating to railways and other transport undertakings, and to provide for certain other matters connected with the matters aforesaid."

**Northern General Transport Co. Ltd.**—This company, a subsidiary of the L.N.E.R. and the British Electric Traction Co. Ltd., jointly, reports that in the year 1943 revenue amounted to £1,226,628 (£1,116,370), and expenses, including provisions made for renewals, deferred repairs, and taxation were £1,076,836 (£979,403), leaving a surplus on working of £149,792 (£136,967). Adding £78,183 brought forward makes a total of £227,975, from which £40,000 (£30,000) has been transferred to reserve. The dividend recommended on the ordinary shares for the year is 10 per cent., less tax (same), and the amount to be carried forward is £82,367.

**Rohilkund & Kumaon Railway Co. Ltd.**—The liquidators announce a further payment of £175,000 on account of the purchase price of the railway received from the Secretary of State for India, which, together with the undistributed balance remaining from the first payment, enables them to make a second distribution of £55 on each £100 of stock. This payment brings the capital distribution which it has so far been possible to make to 365 per cent. The sum of £175,000 referred to above represents a further payment on account by the Secretary of State for India, and does not denote any settlement of the cases in dispute between the Secretary of State and the company which were brought to the notice of stockholders in the liquidators' circular dated January 11, 1944. Warrants will be dispatched on or about April 17.

**Transport Correspondence Courses for the Services.**—Since 1941 the Institute of Transport has sponsored an arrangement whereby correspondence courses for its own examinations have been made available to Members on terms very similar to those applicable to the educational scheme operating in the Services through the Directorate of Army Education (A.E.3). The Institute is now co-operating with that Directorate in making available some general courses on transport subjects which it is hoped will be available before the end of April; enrolments will be made through the usual Service channels. The courses will be conducted by the Institute for the War Office (A.E.3), and will be available to men in the Navy, Army and Air Force; they are intended for men normally employed in transport who are anxious to take up some educational work but do not wish to take the Institute's examinations in the first instance. The subjects will be Economics of Transport (TR1); Elements of Transport (TR2); Law of Inland Transport (TR3); and Organisation & Working of (1) Railway Transport (TR4); (2) Road Transport (Passenger) (TR5); and (3) Road Transport (Goods) (TR6). The serial letters and numbers in brackets are the code references to the respective courses under which they will be listed in the forthcoming War Office booklet, "Correspondence Courses," and the corresponding publications shortly to be issued by the Admiralty and Air Ministry. The Institute would consider the addition of courses on such subjects as

## British and Irish Railway Stocks and Shares

| Stocks | Highest 1943 | Lowest 1943 | Prices April 11, 1944 | Rise/Fall |
|---|---|---|---|---|
| **G.W.R.** | | | | |
| Cons. Ord. ... | 65¼ | 57⅛ | 59⅜ | + ⅛ |
| 5% Con. Pref. ... | 120½ | 108 | 116 | — |
| 5% Red. Pref. (1950) | 110½ | 106 | 108 | — |
| 5% Rt. Charge ... | 137½ | 123½ | 129½ | — |
| 5% Cons. Guar. ... | 135½ | 121⅞ | 127½ | — |
| 4% Deb. ... ... | 118 | 107½ | 113 | — |
| 4½% Deb. ... ... | 119 | 109⅞ | 114¼ | — |
| 4½% Deb. ... ... | 124½ | 116 | 120½ | — |
| 5% Deb. ... ... | 138 | 127 | 131½ | — |
| 2½% Deb. ... ... | 77 | 72½ | 74½ | — |
| **L.M.S.R.** | | | | |
| Ord. ... ... ... | 34⅛ | 28 | 31 | + ⅛ |
| 4% Pref. (1923) ... | 66½ | 58 | 59 | — |
| 4% Pref. ... ... | 80½ | 73 | 76½ | — |
| 5% Red. Pref. (1955) | 105⅜ | 102 | 104½ | — |
| 4% Guar. ... ... | 107 | 98½ | 101½ | — |
| 4% Deb. ... ... | 109⅜ | 103½ | 105½ | — |
| 5% Red. Deb. (1952) | 111½ | 108 | 109½ | — |
| **L.N.E.R.** | | | | |
| 5% Pref. Ord. ... | 12⅞ | 7⅜ | 9⅛ | + ⅛ |
| Def. Ord. ... ... | 5⅜ | 3⅜ | 4⅛ | — |
| 4% First Pref. ... | 66½ | 57½ | 59½ | — |
| 4% Second Pref. ... | 36½ | 30⅜ | 32½ | + ⅛ |
| 5% Red. Pref. (1955) | 99¾ | 93 | 100½ | — |
| 4% First Guar. ... | 102⅜ | 94 | 98 | — |
| 4% Second Guar. ... | 93½ | 85⅜ | 89½ | — |
| 3% Deb. ... ... | 86⅜ | 78⅜ | 82 | + ½ |
| 4% Dev. ... ... | 109⅞ | 101⅜ | 104½ | — |
| 5% Red. Deb. (1947) | 106¼ | 102 | 103 | — |
| 4½% Sinking Fund Red. Deb. ... | 108 | 103½ | 104½ | — |
| **SOUTHERN** | | | | |
| Pref. Ord. ... ... | 80 | 72½ | 76 | — |
| Def. Ord. ... ... | 26½ | 20⅝ | 24¾ | + ⅛ |
| 5% Pref. ... ... | 119½ | 106⅞ | 114 | — ½ |
| 5% Red. Pref. (1964) | 114 | 108½ | 113½ | — |
| 5% Guar. Pref. ... | 136 | 122 | 126½ | — |
| 5% Red. Guar. Pref. (1957) ... ... | 117 | 109¾ | 113½ | — |
| 4% Deb. ... ... | 117½ | 106 | 111 | — |
| 5% Deb. ... ... | 137 | 126 | 130½ | — |
| 4% Red. Deb. (1962-67) ... ... ... | 112 | 106½ | 109½ | — |
| 4% Red. Deb. (1970-80) ... ... ... | 112 | 107 | 110½ | |
| **FORTH BRIDGE** | | | | |
| 4% Deb. ... ... | 109 | 104⅞ | 105 | — |
| 4% Guar. ... ... | 105 | 102½ | 103½ | — |
| **L.P.T.B.** | | | | |
| 4½% "A" ... ... | 125½ | 114 | 121½ | — |
| 5% "A" ... ... | 133⅞ | 123 | 130½ | — |
| 3% Guar. (1967-72) ... | 100¼ | 97 | 99 | — |
| 5% "B" ... ... | 124 | 114 | 119½ | — |
| "C" ... ... ... | 72 | 53 | 71 | + 1 |
| **MERSEY** | | | | |
| Ord. ... ... ... | 34½ | 27 | 33½ | — |
| 3% Perp. Pref. ... | 68 | 59½ | 69 | — |
| 4% Perp. Deb. ... | 104 | 102½ | 103 | — |
| 3% Perp. Deb. ... | 83 | 78½ | 79 | — |
| **IRELAND** | | | | |
| **BELFAST & C.D.** | | | | |
| Ord. ... ... ... | 9 | 6 | 6½ | — |
| **G. NORTHERN** | | | | |
| Ord. ... ... ... | 24½ | 16 | 21½ | + ½ |
| Pref. ... ... ... | — | — | 39½ | + 1 |
| Guar. ... ... ... | — | — | 62 | — |
| Deb. ... ... ... | — | — | 85 | — 1 |
| **G. SOUTHERN** | | | | |
| Ord. ... ... ... | 30 | 9¼ | 49 | — 2 |
| Pref. ... ... ... | 30 | 11 | 49 | — 1½ |
| Guar. ... ... ... | 64 | 26½ | 66 | — 1½ |
| Deb. ... ... ... | 88½ | 51⅛ | 90 | — 1 |

§ ex-dividend

# OFFICIAL NOTICES


**OFFICIAL ADVERTISEMENTS**

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is 9.30 a.m. on the preceding Monday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

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**Brown, Bayley's Steel Works Limited.**—Interim dividend of 5 per cent., tax free, in respect of the year ending July 31, 1944.

**North Devon & Cornwall Junction Light Railway Company.**—The Southern Railway worked this line during 1943 under the agreement of April 7, 1922, and the net revenue for 1943 is £6,614 (same). After payment of interest on the £130,000 of 5 per cent. debenture stock, and an adjustment in respect of income tax, the amount to be carried forward is £1,030 (£973).

**Argentine Fuel Imports.** — Figures recently published by the Bank of London & South America Limited show that imports of coal and coke by Argentina during 1943 amounted to 597,683 tons, compared with 3,004,566 tons in 1939, and that imports of all fuels showed a decrease from 5,030,675 tons to 1,067,880 tons during the same period.

**Hadfields Limited.**—Trading profit for the year 1943 (including investment and miscellaneous income, and after deducting all expenses, maintenance, depreciation, and provision for taxation) was £239,205, and the net profit, after deducting debenture interest, pension scheme contribution £17,512, war damage insurance £14,240, and other items, was £192,679 (£202,254). Adding £733,237 balance brought forward makes £925,916. The final dividend on the ordinary stock is at the rate of 1s. 6d. a unit of 10s. (equivalent to 15 per cent.), less tax, making 22½ per cent., less tax, for the year (same), leaving £797,867 to be carried forward. The total production of the company during 1943 did not reach the high volume of the previous year, because of changes in Government requirements.

**Thos. Firth & John Brown Limited.**—Lord Aberconway, presiding at the 63rd ordinary general meeting of this company, said that stocks and work in progress showed a reduction of £222,040 not from any fall in the volume of trading, but because of greater regularity in supplies of materials and the receipt of large progress payments. The departments charged with price regulation had, in his opinion, carried out their difficult task both fairly and efficiently. There was, however, an urgent necessity for economy in the range and amount of statistical information which industry had to provide, largely in this connection. The desirability of modifying in some degree the restrictions upon export trade merited attention. One of the conditions of Lend-Lease assistance was that Lend-Lease supplies should be used only to supplement deficiencies in home supplies, which was only fair. Needs of export markets other than those required for war purposes were to be otherwise provided. This had not proved in practice particularly satisfactory where pre-war markets were concerned; and in view of the importance of export trade after the war, it was important that relations, in particular with the British Dominions overseas, should be safeguarded.

**Institution of Locomotive Engineers.**—The annual general meeting of the Institution of Locomotive Engineers will be held at 5.30 p.m. on April 20, in the hall of the Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, when Mr. E. S. Cox, Chief Technical Assistant to the Chief Mechanical Engineer, L.M.S.R., will read a paper on "Locomotive Axleboxes."

**John Baker & Bessemer Limited.**—After allowing £59,235 for income tax and E.P.T. and providing for all other charges, the surplus for the year 1943 was £25,500. Adding £23,414 brought forward makes £48,914. A sum of £1,815 is written off war damage insurance. A dividend of 10 per cent., less tax, has been declared on the ordinary shares, the same as for the five previous years, and £26,881 is carried forward.

**No Increase in Indian Railway Fares.**—The Government of India has decided not to proceed with its proposal to increase railway passenger fares by 25 per cent. This decision is stated to be in deference to the opinion of the majority of elected members of the Central Assembly, who recently carried a division against the Government by way of expressing their disapproval of the proposed increase, reference to which was made in our issues of February 25 and March 3 last.

**British Aluminium Co. Ltd.**—Accounts for the year 1943 show a trading profit, including income from subsidiary and allied companies and after provision for E.P.T., of £1,045,112. Adding interest, dividends on investments, transfer fees, and £251,997 balance brought forward makes £1,320,934. After deducting directors' fees £31,250, provision for income tax £445,000, debenture stock service fund £175,000, reserve for depreciation £75,000, and reserve account £125,000, there is a balance of £469,684. The final dividend on the ordinary stock is 7 per cent., making 10 per cent., less tax, for the year, and the amount carried forward is £274,684.

**Baldwins Limited.**—In the report for the year 1943 it is stated that the profit, being the balance of the manufacturing and trading account, dividends and interest from subsidiary companies and from investments, after providing for taxation and after deducting special expenditure at collieries, and a provision for deferred repairs, was £383,659. Deducting depreciation £175,000 and directors' fees £6,150, leaves £202,509, to which has to be added £63,431 brought forward, making £265,940. The dividend for the year on the ordinary stock is 10 per cent., less tax, and £90,023 is carried forward. All the subsidiary companies earned profits in 1943. A dividend of 6 per cent. has been paid on the ordinary shares of Guest, Keen Baldwins Iron & Steel Co, Ltd. Robt. B. Byass & Co. Ltd., a wholly owned subsidiary, was liquidated and merged in the parent company at March 31, 1943.

**Beira Railway Co. Ltd.**—The dividend for the year to September 30, 1943, is 1s. a share, less tax. This compares with 2s. a share, less tax, for the previous year.

**Railway Clerks' Mobile Unit.**—The Railway Clerks' Association has presented a mobile unit to the Y.W.C.A. of Great Britain. It will bring comforts, shop, and library books to isolated units of the women's services in Northern Ireland.

**Vulcan Foundry Limited.**—The annual report of the Vulcan Foundry Limited states that during the year the company, jointly with the North British Locomotive Co. Ltd., acquired an interest in Robert Stephenson & Hawthorns Limited. An interchange of directors also has been made with a view to closer working co-operation. Trading profit of Vulcan Foundry for 1943, after estimated provision for price adjustments on Government contracts, was £265,799, against £222,118 for the previous year; interest on investments was £5,827 (£7,689); rents £961 (£971), making £272,587, as compared with £230,778. Net profit was £169,113, compared with £143,447 after charges, including £100,180 (£84,021) for general repairs and depreciation. Tax provision was £144,833, against £118,479. The ordinary dividend is 5 per cent., compared with 4 per cent. The amount carried forward is £44,526, which compares with £43,873 brought in.

## Forthcoming Events

April 15 (*Sat.*).—Metropolitan Graduate & Student Society, at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C.2, 2.15 p.m. "World communications," by A. G. Course.

April 15 (*Sat.*).—Permanent Way Institution (Manchester & Liverpool Section) assembling at the large gates of the Edge Hill Shops of the L.M.S.R. in Combermere Street, Liverpool, at 2.30 p.m. for visit to the District Engineer's Workshops and the Gridiron, Edge Hill.

April 20 (*Thurs.*). — Institute of Fuel, at the Institution of Mechanical Engineers, Storey's Gate, Westminster, London, S.W.1, 2.30 p.m. "The organisation of a research department" by Dr. A. Parker.

April 20 (*Thurs.*).—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, 5.30 p.m. "Locomotive Axleboxes," by E. S. Cox. Annual general meeting.

April 28 (*Fri.*).—Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, 5.30 p.m. "The application of fabricated construction to machine design," by F. Koenigsberger. General meeting.

# Railway Stock Market

Stock markets have remained firm, although the business passing was again only moderate. Nevertheless, steady demand appeared to be in evidence for front-rank stocks, and there have been a number of fractional gains in British Funds. Moreover, the recent moderate setback in home railway prior charges, reference to which was made in these notes a week ago, attracted rather more attention, and in some cases prices have rallied half-a-point. Nevertheless, yields still remain very satisfactory when compared with the return on stocks in other sections of the market carrying similar high-class investment merits. The somewhat better trend of markets generally has also been reflected by small gains in other classes of home railway securities, including the ordinary stocks. Sentiment appeared to benefit from the view that opinions recently expressed in some quarters as to the after-the-war position of the railways as to increased wages and other costs were unduly pessimistic in their implications. Post-war decisions in regard to the future of transport will naturally have to bear higher costs and similar factors in mind, and there is every reason to believe that the railways will be treated fairly in this connection. Southern 5 per cent. preference at 114½ shows a fractional recovery from its recent decline, but the yield of 4⅜ per cent. would seem generous when judged in relation to the cover for dividend requirements and its investment status. At their current levels, L.M.S.R. 1923 preference and L.N.E.R. first preference yield around 6⅝ per cent., and in each case are virtually 8 points below the highest level recorded this year. Assuming these stocks were valued on a 5 per cent. yield basis, which would appear to be fully justified on the general position and outlook, they would, of course, be around 80. It is not suggested that a rise of this kind can be expected, but nevertheless, if as seems not unlikely, home railway stocks come into greater favour in the market, preference as well as ordinary or equity stocks would apparently offer favourable scope as regards capital appreciation. Elsewhere, L.N.E.R. 4 per cent. second preference, which received 2¾ per cent. for 1943 (the maximum that can be expected unless there is revision of the financial agreement) yields 8⅜ per cent., which compares with approximately 8⅛ per cent. on L.M.S.R. ordinary and Southern deferred. On the other hand, Southern 5 per cent. preferred ordinary yields 6½ per cent., or rather less than either L.M.S.R. 1923 preference or L.N.E.R. first preference, both of which would appear to be relatively undervalued at current prices.

Compared with a week ago, Great Western ordinary improved from 59 to 59¾. Moreover, the 5 per cent. preference strengthened from 116 to 116½, although the 4 per cent. debentures were fractionally lower on balance at 113, and the guaranteed stock unchanged at 126½. L.M.S.R. ordinary rallied from 30½ to 31, the senior preference from 76 to 76½, and the 1923 preference from 59 to 59½. This railway's guaranteed stock, however, was unchanged at 101, as were the 4 per cent. debentures at 105½. L.N.E.R. second preference was half-a-point better at 32¼, and the first preference also showed a fractional gain at 59½. Moreover, L.N.E.R. first guaranteed was better at 98, although the second guaranteed at 89½ was unchanged on balance. Southern deferred improved to 24⅝, compared with 24¼ a week ago, and the preferred strengthened, from 76 to 76½, as did the 5 per cent. preference from 114 to 114½. Among London Transport issues, the "C" showed further improvement from 71 to 71¾ and the 4½ per cent. "A" was better at 121½. The relatively small yield on "C" stock as compared with the return on ordinary stocks of the main-line companies reflects confident hopes of better dividends after the war. There is less talk in the market of the possibility of this stock being converted into a fixed-interest-bearing security, for which there has never been any official foundation.

Argentine railway stocks were inclined to ease. B.A. Gt. Southern was 13½, compared with 13¾ a week ago, and the 6½ per cent. preference 26, compared with 26½. The 4 per cent. debentures were better at 61, and a number of gains were also shown in debentures of other Argentine railways. Canadian Pacifics were better at 15⅜. Beira Railway certificates were 21s. 3d. after the reduction in the dividend.

## Traffic Table and Stock Prices of Overseas and Foreign Railways

| | Railways | Miles open | Week ending | Traffic for week: Total this year | Traffic for week: Inc. or dec. compared with 1941/2 | No. of Weeks | Aggregate traffics to date: Totals 1942/3 | Aggregate traffics to date: Totals 1941/2 | Aggregate traffics to date: Increase or decrease | Shares or stock | Prices: Highest 1943 | Prices: Lowest 1943 | Prices: April 11, 1944 | Prices: Yield % (see Note) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South & Central America | Antofagasta (Chile) & Bolivia | 834 | 2.4.44 | £ 25 940 | + £ 2,750 | 14 | £ 394,920 | £ 371,910 | + £ 23 010 | Ord. Stk. | 15¾ | 10 | 11½ | Nil |
| | Argentine North Eastern ... | 753 | 1.4.44 | 14,772 | + 2,676 | 40 | 569,580 | 487,020 | + 82,560 | ,, | 7⅞ | 5 | 5 | Nil |
| | Bolivar ... ... ... | 174 | Mar., 1944 | 6,096 | — 514 | 13 | 15,953 | 16,331 | — 378 | 6 p.c. Deb. | 22½ | 18 | 17½ | Nil |
| | Brazil ... ... ... ... | — | — | — | — | — | — | — | — | Bonds | 23½ | 19 | 17 | Nil |
| | Buenos Ayres & Pacific ... | 2,807 | 1.4.44 | 130,800 | + 12.600 | 40 | 4,159,320 | 3,946,740 | + 212.580 | Ord. Stk. | 8½ | 5⅛ | 6½ | Nil |
| | Buenos Ayres Great Southern | 5,080 | 1.4.44 | 200.460 | + 24,480 | 40 | 7,181,400 | 6,459,960 | + 721.440 | Ord. Stk. | 17⅛ | 9½ | 13½ | Nil |
| | Buenos Ayres Western ... | 1,930 | 1.4.44 | 63,000 | + 11,100 | 40 | 2,218,860 | 2,148,720 | + 70,140 | ,, | 16 | 9⅞ | 11½ | Nil |
| | Central Argentine ... ... | 3,700 | 1.4.44 | 178.620 | + 38,472 | 40 | 5,960,412 | 5,301,579 | + 658,833 | ,, | 10½ | 6½ | 8½ | Nil |
| | Do. ... ... | — | — | — | — | — | — | — | — | Dfd. | 4¾ | 3 | 4 | Nil |
| | Cent. Uruguay of M. Video | 972 | 1.4.44 | 41,444 | + 8,278 | 40 | 1,342,159 | 1,116,833 | + 225,326 | Ord. Stk. | 7⅞ | 4½ | 5½ | Nil |
| | Costa Rica ... ... ... | 262 | Feb., 1944 | 22.805 | + 4,909 | 33 | 175,664 | 114,452 | + 61,212 | Stk. | 16 | 12½ | 15 | Nil |
| | Dorada ... ... ... | 70 | Feb. 1944 | 21,672 | + 2,272 | 9 | 47,692 | 39,990 | + 7,702 | 1 Mt. Db. | 96 | 92 | 93½ | 6⅝ |
| | Entre Rios ... ... ... | 808 | 1.4.44 | 20,340 | + 4,812 | 40 | 782,076 | 706,458 | + 75 618 | Ord. Stk. | 9 | 5½ | 6 | Nil |
| | Great Western of Brazil ... | 1,030 | 1.4.44 | 23,400 | + 9,900 | 14 | 315,000 | 226,000 | + 89,000 | Ord. Sh. | 59/9 | 24/4½ | 26/3 | Nil |
| | International of Cl. Amer. ... | 794 | Feb., 1944 | $819,809 | + $163,288 | 8 | $1,534,088 | $1,312,320 | + 221,768 | — | — | — | — | — |
| | Interoceanic of Mexico ... | — | — | — | — | — | — | — | — | 1st Pref. | 2¾ | 1¼ | ⅜ | Nil |
| | La Guaira & Caracas... ... | 22½ | Mar., 1944 | 7,704 | — 1,656 | 13 | 21,956 | 27,435 | — 5,479 | 5 p.c. Deb. | 90 | 80 | 83½ | Nil |
| | Leopoldina ... ... ... | 1,918 | 1.4.44 | 42,607 | + 7,411 | 14 | 578,606 | 428,685 | + 149,921 | Ord. Stk. | 7⅜ | 4 | 5 | Nil |
| | Mexican ... ... ... | 483 | 31.3.44 | ps. 659,700 | — ps. 62.100 | 14 | ps.5,198.300 | ps. 4,472,900 | + ps. 725,400 | Ord. Stk. | 1⅜ | ⅜ | ½ | Nil |
| | Midland Uruguay ... ... | 319 | Jan., 1944 | 16,510 | + 6 | 30 | 119,975 | 98,659 | + 21,316 | — | — | — | — | — |
| | Nitrate ... ... ... | 382 | 31.3.44 | 9,380 | + 1,606 | 12 | 53,480 | 35,378 | + 18,102 | Ord. Sh. | 83/9 | 71/3 | 70 | Nil |
| | Paraguay Central ... ... | 274 | 31.3.44 | $58,179 | + $12.589 | 14 | $2,007,271 | $1,558,740 | + $448,531 | Pr. Li. Stk. | 75 | 51½ | 70 | 8 |
| | Peruvian Corporation ... | 1,059 | Mar., 1944 | 117,202 | + 26,463 | 39 | 964,686 | 757,581 | + 207,105 | Pref. | 17⅛ | 10¾ | 10 | Nil |
| | Salvador ... ... ... | 100 | Jan., 1944 | c193,000 | + c 16,000 | 29 | c 796,000 | c 609,000 | + c 187,000 | — | — | — | — | — |
| | San Paulo ... ... ... | 153½ | — | — | — | — | — | — | — | Ord. Stk. | 71 | 57 | 49 | 4⅛ |
| | Taltal ... ... ... ... | 160 | Feb., 1944 | 4,560 | + 2,065 | 36 | 45,270 | 36,911 | + 8,359 | Ord. Sh. | 37/6 | 20/- | 17/6 | Nil |
| | United of Havana ... ... | 1,301 | 1.4.44 | 94,090 | + 23,337 | 40 | 2,161,265 | 1,975,491 | + 185,774 | Ord. Stk., | 8 1/32 | 3¼ | 3 | Nil |
| | Uruguay Northern ... ... | 73 | Jan., 1944 | 1,372 | — 323 | 30 | 40,088 | 9,605 | + 483 | — | — | — | — | — |
| Canada | Canadian Pacific ... ... | 17,034 | 31.3.44 | 1,921,400 | + 236,000 | 14 | 14,969,800 | 12,656,600 | + 2.313,200 | Ord. Stk. | 18 | 13⅞ | 15½ | Nil |
| India† | Barsi Light ... ... ... | 202 | Feb., 1944 | 25,575 | + 3,285 | 47 | 237,600 | 197,852 | + 39,998 | — | — | — | — | — |
| | Bengal-Nagpur ... ... | 3,267 | Feb., 1944 | 974,475 | + 23,250 | 7 | 11,369,400 | 10,049,850 | + 1,319,550 | Ord. Stk. | 104½ | 101½ | 106½ | 3⅓ |
| | Madras & Southern Mahratta | 2,939 | Feb., 1944 | 285,150 | + 42,472 | 44 | 9,380,910 | 7,961,306 | + 1,419,604 | — | — | — | — | — |
| | South Indian ... ... ... | 2,349 | 20.12.43 | 199,410 | + 24,449 | 37 | 5,321,558 | 4,562,445 | + 750,113 | — | — | — | — | — |
| Various | Egyptian Delta ... ... | — | 20.2.44 | 19,780 | + 5,522 | 48 | 543,990 | 418,153 | + 125.837 | Prf. Sh. | 6 1/16 | 2⅜ | 6 | Nil |
| | Manila ... ... ... | — | — | — | — | — | — | — | — | B. Deb. | 45 | 32 | 40 | 8½ |
| | Midland of W. Australia ... | 277 | Feb., 1944 | 21,583 | — 6.758 | 33 | 245,504 | 252,708 | — 7,204 | Inc. Deb. | 101 | 93 | 100½ | 6 |
| | Nigerian ... ... ... | 1,900 | 30.12.43 | 68,456 | + 7,866 | 26 | 1,933,466 | 1,833,420 | + 160,046 | — | — | — | — | — |
| | South Africa ... ... ... | 13,291 | 5.2.44 | 906,790 | + 63,914 | 45 | 37,522,295 | 34,935,498 | + 2,586,797 | — | — | — | — | — |
| | Victoria ... ... ... | 4,774 | Nov, 1943 | 1,335,935 | — 64,116 | — | — | — | — | — | — | — | — | — |

**Note.** Yields are based on the approximate current price and are within a fraction of ⅛ Argentine traffics are given in sterling calculated @ 16⅔ pesos to the £.
† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend